TRAINING EFFECTIVENESS EVALUATION OF DEVICE A/F37A-T59
TATG REPORT #2-07

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The Training Programs Branch of the 34th Tactical Airlift Training Group (TATG) conducted a study to explore the applications of the Instrument Flight Simulator (IFS) to pilot and navigator training. The study was conducted using four test classes. After a standard academic course, classes of pilots and navigators were divided into test and control groups. The test groups were trained using a predesigned simulator syllabus and their performance was measured in the aircraft. The control groups received their training only in the aircraft before completing the same performance measurement. The study results in terms (see reverse side)

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ABSTRACT

The 34th Tactical Airlift Training Group (TATG) at Little Rock AFB provides initial and tactical mission qualification training to C-130 crewmembers. In November 1980, the 34 TATG received a prototype of a new Instrument Flight Simulator (IFS) from the Singer Company, Link Division, in partial fulfillment of a 1977 contract. This prototype represents a new generation of simulators to be incorporated in the initial and refresher training throughout the C-130 worldwide force. The C-130 IFS features several recent innovations in simulator technology including simultaneous training for a pilot, copilot, flight engineer, and navigator controlled from an onboard, console-type, instructors' station. The successful use of an earlier model simulator in initial qualification training is a well documented fact; however, a simulator had never been used in tactical mission qualification training.

One of the new features of the IFS is the inclusion of Stationkeeping Equipment (SKE). SKE is a system which allows up to 36 aircraft to maintain fixed separation between airplanes in formation and to locate and identify each other during day and night flights in the weather. A complex set of procedures for proper utilization of SKE during formation airdrops forms a large portion of the tactical mission qualification training course. The SKE simulation capability makes the new simulator a promising device for mission qualification training.

Between June and September 1981, the Training Programs Branch of the 34 TATG conducted a study to explore the application of the IFS to pilot and navigator training. There were four areas of concern in this study: 1. To determine if a positive transfer of training was possible using the IFS, 2. To investigate possible course structures and sequencing to optimize the effectiveness of the IFS, 3. To produce and prove courseware to be used in formal training, and 4. To determine the efficacy of the instructor training program.

The study was conducted during the summer of 1981 using four test classes. After a standard academic course, classes of pilots and navigators were divided into test and control groups. The test groups were trained using a pre-designed simulator syllabus and their performance was measured in the aircraft. The control groups received their training only in the aircraft before completing the same performance measurement.

The study results in terms of subjective and objective data showed that the IFS could reasonably support a training effectiveness ratio of approximately 0.5. The best training strategy appears to be an integration of IFS missions among flying missions and ground training rather than in one block. Problems associated with the operation of such a complex device were minimized through a new design of instructor guidance.

We conclude that the new IFS can make a significant contribution to enhance the present course of instruction, may reduce required training by two flight missions and will certainly improve the safety aspect of those maneuvers performed. We recommend inclusion of the IFS in mission qualification training. We also recommend a re-evaluation of the mechanics of the proficiency advancement concept as applied to these courses in light of our experience in this test program.

CONTENTS

INTRODUCTION

1. Background: The 34th Tactical Airlift Training roup at Little Rock AFB is tasked to provide the DOD C-130 training to student pilots and navigators. Mission qualification training covers the areas of airdrop, formation, and shortfield operations. S udent pilots and navigators learn formation procedures for both instrument and visual operations. Formations in instrument conditions rely on Stationkeeping Equipment (SKE) to maintain aircraft separation. Training SKE procedures makes up a large proportion of the curriculum.

2. Stationkeeping Equipment: The Intraformation Positioning Set AN/APN 169A is a system which allows up to 36 aircraft to maintain fixed separation between airplanes in formation, and to locate and identify each other during day and night flights under instrument conditions. The system performs three basic functions: 1. The display of stationkeeping information on an azimuth and range indicator (PPI) situation display and track-while-scan position data on a flight director display, 2. An integral signaling capability for the transfer of data to coordinate changes of the flight path, and, 3. An audiovisual alarm warning system (proximity warning) to signal the presence of an intruding SKE equipped airplane within a selectable zone. The PPI display is one of the principal readout devices of the system. This situation display is capable of indicating all participating airplanes within a 10-mile radius. The track-while-scan display provides the capability of maintaining X, Y, and Z axis position with respect to any selected airplane by manually setting track, crosstrack, and altitude on the control panel. Position is maintained by flying the attitude director indicator and stationkeeping range meter, while still maintaining all airplanes on the PPI. A data transfer function provides commands to and from specifically selected airplanes in the formation and provides the necessary data channel for transfer of altitude information. One airplane, which can be at any position in a formation, must function as a synchronization master while all others act as followers (1). Operation of this equipment and specialized procedures for formation flight involving pilots and navigators are the main areas of concern in this study.

3. Mission Qualification Course Content: The 62nd TAS and 34th TTS were responsible for conducting training in course C-130EP02P3 as described in AFM 50-5 and Course Summary Documents (CSD). The course was divided into 22 classes per year of 28 days each. Pilots and copilots received six days of academic training in a classroom lecture format. There were written tests each day covering the lecture of the previous day. The last half of day 5 was devoted to a crew coordination part-task trainer. The six days of academics were followed by a flying phase of 22 days. During the flying phase, the students completed an average of eight training flights plus a flight evaluation. The remaining days in the flying phase were occupied by ground training and schedule adjustment days. End-of-course evaluation consisted of an oral examination and a check flight documented on a MAC Form 4C and an AF Form 8. Course C-130EP02P3 produced 404 mission qualified pilots in FY 1981. Course C-130EP02NR, navigator mission qualification, produced 105 graduates in FY 1981. The course, as described in AFM 50-5 and Course Summary Documents, was divided into 22 classes per year of 30 training days each. The training days for each class were divided between two blocks of instruction. The first block was an academic phase lasting nine days which consisted of classroom lecture and the use of various hands-on training experiences, including three navigator training missions and one crew coordination trainer mission. The second block was a flying phase of 21 training days to complete an average of eight flying missions plus a flight evaluation. The formal evaluation process consisted of an open and closed book written examinations administered during the academic phase, and an oral and flight evaluation which completed the flying phase. Evaluators gave an overall rating for each checkride; Qualification levels 1, 2, and 3 (Q-1, Q-2, and Q-3) correspond to fully qualified, qualified with additional training required, and unqualified, respectively. A Q-1/2 indicated an individual was fully qualified with some subareas rated less than adequate. The evaluation process was documented on an AF Form 8 with the MAC Form 48 used as a work sheet by the flight examiner.

4. Instrument Flight Simulator (IFS): In November 1980, the first C-130E flight simulator, type A/F37A-T59, was shipped from the Singer-Link Corporation, Binghamton, NY to Little Rock AFB. This technologically advanced aircrew training device (ATD) provides a training environment using a simulated C-130 aircraft cockpit. The cockpit can provide simultaneous training for a pilot, a copilot, a flight engineer and a navigator, controlled from an onboard, console-type, operators' station. The IFS is equipped with a six degree of freedom motion base which can provide highly realistic motion cues. A list of some of the simulator's other design capabilities includes full SKE airdrop simulation, radar simulation, manual or pre-programmed malfunctions, a library of demonstrations of typical maneuvers such as instrument approaches or airdrop procedures, and an emergency procedures monitor function.

Acceptance test procedures on the IFS were completed at Little Rock AFB in April 1981. The USAF Airlift Center Interim Report presents conclusions concerning IFS capabilities based on Qualification Operational Test and Evaluation (QOT&E) results (2). Some of the conclusions were: 1. The new simulator is superior to its 20 year old predecessor. 2. The new simulator is capable of training crew tasks that cannot be accomplished in the old simulator. 3. The navigator station enhances navigator training and crew coordination. Annex C of that QOT&E lists special aircrew tasks that were found to be trainable, partially trainable, or not trainable in the IFS. Among those tasks listed as trainable were: Stationkeeping Equipment checklist, SKE formation escape, SKE formation recovery, airdrop checklist, and airborne radar approaches. This information suggested that the new simulator would have direct application to pilot and navigator mission qualification training.

5. Summary of Primary Objectives: In June 1981, the Training Programs Branch of 34th TATG initiated a study to explore possible application of the IFS in pilot and navigator mission qualification training. Listed below are the four areas of principal concern in this study arranged in order of decreasing importance.

a. Transfer of Training: Transfer of training implies that an individual who is unskilled at a task on one device can develop this skill with practice on a similar device. Practice in the simulator should improve performance in the aircraft, but the actual behaviors need not be exactly the same (3) Transfer of training is analagous to a football team's no contact scrimmage as practice to improve game skills.

The purpose of this study is to examine transfer of training rather than the validity of the simulator as a predictor of performance (4). "Validity" refers to the device's utility in performance prediction and "transfer of training" refers to the device's utility in facilitating learning. A simulator's ability to make valid performance prediction relates to its utility in predicting successful performance of a task. Transfer of training utility relates to the simulator's ability to substitute for aircraft training. No matter what the validity of the device, if the student group using the simulator emerges better able to perform actual aircraft tasks, transfer of training has occurred.

The results of the transfer of training may be either positive or negative. Positive transfer implies that as a result of training in the simulator, less time is needed in the aircraft in order to attain a predetermined performance criterion. Negative transfer indicates that more aircraft time is required than would have been necessary if the simulator had not been used in the training process (5).

b. Course Structure: A second objective was to investigate possible course structures to optimize simulator effectiveness. The possibilities run through a wide spectrum of structures. The most traditional structure is a building block approach in which each phase of training is a discrete block with specific start and stop points. The sequence of academics/simulator/ flying training might be considered the best order of presentation based on the transition from less to more sophisticated training devices. Perhaps a sequence such as SKE academics/SKE simulator/visual academics/flying training would be an improvement since it would allow two simultaneous training tracks. Another possibility is a fully integrated approach where the phases of training overlap as when the simulator phase extends through academics and into the flying phase. Somewhere among these alternatives lies the optimum mix for effective training.

Also under consideration was the best arrangement of the course from the point of view of efficient scheduling. An integrated approach might make better use of the students' time, but it limits scheduling flexibility due to crew rest concerns. A building block approach has the advantage of scheduling simplicity. This study was intended to identify the best course structure for effective training and efficient scheduling.

c. Courseware: Since SKE procedures had never before been presented in a simulator there was no applicable courseware in existence. Thus, initial draft courseware was required and subsequent revisions made based on instructor and student recommendations. The third objective, was to produce and prove simulator courseware and job performance aids. If the simulator proved to be an effective training device and warranted inclusion in the curriculum, useable course materials would then be available.

d. Instructor Training: The old C-130 simulators were never used for, nor were they capable of, mission qualification training. Thus, just as there was no existing courseware, there were no experienced instructors upon which to draw for this study. In addition, the new C-130 IFS capabilities were unknown to the formal school instructors. An initial task was to establish a qualified force of instructor pilots and navigators in adequate numbers for the study. An additional objective of the study was to determine the efficacy of the instructor training program.

METHOD

A study to determine the effectiveness of a particular ATD activity must be organized in a manner that will permit valid and repeatable results to be obtained. A number of types of training effectiveness studies were considered. The transfer of training design was determined to be the most appropriate to determine whether ATD training would improve a student's subsequent performance in the aircraft (6).

1. Study Design: Through the use of a transfer of training design, experimental and control groups would be evaluated both objectively and subjectively. The methodology of data gathering required that experimental groups be exposed to a pre-designed simulator syllabus and then have their performance measured in the aircraft. The control group would receive their training only in the aircraft before completing the performance measurement.

a. Time: There were many constraints placed upon the implementation of this experimental program. One of the most profound limitations was the availability of simulator time. Initial operation began in Mar 81 with 20 hours available per week. In May, the time available each week began to increase and in July reached 48 hours divided into four, 12 hour days. All use of the simulator was lost after 1 Oct 81 due to installation of a visual display system. Due to the testing and validation of the visual system, further studies of SKE mission qualification training were not considered likely.

Within the available simulator time, Course Developers were further limited by the division of time among other users. Instructors had to be trained to operate the simulator and proof of concept studies run on other courses. When all the available time had been allocated, the amount reserved for mission qualification purposes would support only four test classes.

b. Numbers: Based on available simulator time for instructor qualification and student training, four student crews each from classes 81-012, 81-014, 81-016, and 81-018 were selected as the test group. The remaining students in these classes and the student population in the intervening odd numbered classes made up the control group. While it would have been desirable to get a statistically significant sample for the test group, the actual number of subjects was limited by the availability of resources; principally, simulator time. The test group instructor manning requirement was dependent on the number of test group students. Initially, six instructor pilots and six instructor navigators were qualified in the simulator with replacements to be qualified as needed. The student test group was composed of 30 pilots and 15 navigators.

c. Missions: The considerations for the number of simulator missions, the length of each period, and the content of the training missions were no less complex. The using agencies at this location agreed that the optimum mission length for training periods would be four hours based on maintenance requirements and student fatigue. Four hour blocks became a useful unit of measure for scheduling purposes.

Numerous studies have shown that a training effectiveness ratio of .48 is a good average value (7). This value was used as a starting point from which planning proceeded. Based on simulator time available, frequency of class starts, and the number of days allocated for flying training, a preliminary decision was made to produce a training block of four simulator missions. Existing instructional plans were changed only in the flying phase of instruction for both pilots and navigators. For the test group, this change included four simulator missions and six flying missions followed by the standard evaluation. The planned sequence after academics became one flying mission, a block of four simulator missions, five more flying missions and an evaluation.

The flight evaluation was conducted in the aircraft because command regulations would not permit evaluation of course objectives in the simulator. In order that the control group not be given an advantage on evaluations by having more experience on local routes than the test group, the simulator missions were designed to closely mirror actual local profiles on missions 1, 3, and 4. Mission 2 was reserved to exploit the unique capabilities of the IFS. This profile contained two routes designed specifically to provide SKE formation enroute turn practice.

The simulator was designed to allow for preprogramming of mission profiles. This feature was incorporated for ease of instructor operation. However, due to system limitations during IFS testing, this feature was not available for this study. Thus, the instructors had to manually program all mission profiles prior to each training period.

d. Subjects: The selection of student subjects could have had a profound impact on the study results. Thus, every effort was made to choose a cross-section of the available graduates from the initial qualification course. See attachment 1 for description of the target population. An exception to this policy was made for the first class. The class was conducted with students handpicked on the basis of previous C-130 experience or strong performance in the initial qualification course. With this background, they would not be hurt by any shortcomings in the initial syllabus (8, 9). Also, the best qualified students were expected to point out weak areas in the program. Students from the next three classes were chosen so that the test group would closely approximate the control group in experience and aptitude.

2. Data: The data collected for this study fell into one of two categories, subjective or objective. The subjective data was necessary to assess attitudes toward the appropriateness of simulator training in the formal school, and perceptions of the transfer of training. The objective data formed the basis of the quantitative measure of the transfer of training.

a. Subjective Data: The instructor mission reports in attachment 2 provided Course Developers with their first feedback for improving the course as training progressed. Areas of interest for each mission included adequacy of courseware, course content and training aids. This report solicited suggestions for improving the training and identified mission related problems of realism, instructor workload and maintenance of the training device. This report aided developers in resolving student critique items.

Students were asked to complete a critique of the simulator course before and after the flying phase of training. The critiques used a 1 to 5 numerical grading scale to rate approximately 18 course-related areas with room for comments and student data. In this way, student attitudes could be gauged before flight training to get immediate feedback on the details of the simulator curriculum. The critique administered after the flying phase was intended to indicate the student perceptions of simulator realism and how well it prepared them for their aircraft missions. This critique was supplemented with pertinent comments about the simulator curriculum from the formal end-of-course critique on facilities and training. The two post-flying critiques taken together allowed the student to comment on the appropriateness of training from the perspective of course completion.

In order to get the instructors' overall view of the course, a meeting was held on 30 Oct 81 after all simulator training was completed. The instructors had had enough time to mull over the program by the time the comments in the mission reports were raised for general discussion. A consensus was reached in each case about the validity and relative importance of each item reported. This also provided a trigger for further discussion on several topics. This meeting was the last source of subjective data considered.

b. Objective Data: Numeric data was extracted from student training records and MAC Form 4C/48, evaluation worksheets. Attachment 3 contains examples of the two forms that are used in student records to document progress in the program. The Little Rock AFB Form 0-92 is used to summarize events completed on each flying mission and ground training session. Instructors can also assign performance and knowledge grades based on student proficiency on a Little Rock AFB Form 0-91f/i. The grading system spans the numeric grades 1 to 4 for performance and A to D for knowledge levels. The grading standards are explained on the form. Data on flying time and number of sorties completed can also be obtained from this form. A grading column has been designated for documenting performance of specific tasks on flight evaluations.

Another measure of checkride performance is the MAC Form 4C/48. It functions as a checklist for conducting and recording flight evaluations. Its use is mandated by MACR 60-1 and it becomes the draft from which the AF Form 8, Certificate of Aircrew Qualification, is completed. The use of both the MAC Form 4C/48 and the evaluation section of the LRAFB Form 0-91f/i to document graduation proficiency may seem to be a duplication of effort. In actuality, there are many different tasks on each form and only limited overlap. Data describing graduate capabilities was to be extracted from both sources.

3. Courseware: Instructor guides and student study guides are routinely distributed as a part of courseware for the academic and flying phases of training. These guides cover such areas as mission descriptions, ground training lesson plans, explanations of procedures and selected techniques. With the addition of simulator missions, additional guides were developed for both the instructors and the students. These test guides were developed with two objectives in mind: the need to prepare students to use the simulator time effectively, and the need to adequately prepare instructors for the unique simulator training mission. The resulting new student study guides followed the format which had been historically successful as preparation for flying missions. For the instructor guides, a wholly new concept was required. In view of the complexity involved in the effective operation of the simulator and the instructors' simulator experience level, a highly directive style was chosen. Refer to attachment 4. As the mission progressed, "cues" were used to alert the instructors to a required computer input. The specifics of the input were explained under "action". Finally, under the "function" column could be found an explanation of the result of the input. This format was not needed solely for computer inputs but was also used for simulated radio calls narrated by the instructors. The relative merits of this approach are discussed under Conclusions.

The remaining major area of courseware which required development was the formal tactical briefing. Prior to each formation training flight, participating crews attend a formal briefing in accordance with MACR 55-130. This briefing is normally developed and presented by the designated crew on a rotational basis. In contrast, for simulator missions there was only one actual crew participating because the other formation aircraft were computer generated. Student preparation of the standard briefing was deemed inappropriate due to time constraints and training priorities. Key criteria in the development of a new briefing were: content in accordance with MACR 55-130, similarity of format to the standard briefing, and simplicity of preparation. A briefing which met these criteria was developed. This mission specific briefing was presented informally by the instructor pilot and instructor navigator prior to each simulator mission.

Additional special courseware which was required for the test program included completed MAC Forms 280, 512, and 348, weather flimseys, and computed air release point photos with annotated modified grids, charts and mission folders. These materials, in addition to standard instrument departures, low altitude approach plates, and takeoff and landing data, were developed as instructor support and to aid standardization of training.

PROCEDURES

The chronology of the test program spans many months. It will be considered here in terms of three major phases. The most convenient divisions are: Design Phase, Instructor Checkout Phase, and Training Phase. Also considered here will be the problems encountered throughout the study period from initial design to the end of training.

1. Design Phase: Course Developers were first exposed to the IFS in Aug 80 on a Training Group sponsored trip to the Singer-Link plant at Binghamton, NY. During the visit, Singer-Link personnel demonstrated the capabilities and design characteristics of the cockpit simulator, the instructor onboard station, and the motion base. The Developers returned after four days with enough data to prepare a preliminary planning document in Oct 80 that outlined assumptions, a scenario for incorporating the simulator in training, a study proposal and possible mission profiles. See Attachment 5.

The simulator arrived at Little Rock AFB in Nov 80 and completed final acceptance testing 20 Feb 81. Course Developers participated in acceptance testing and attended the first class of the Tactical Airlift Instructor School's (TAIS) Simulator Instructor Course (SIC) the following week. At this time it became apparent that the test profiles in the computers were unsuitable for training. It also became apparent that neither the equipment nor qualified personnel were available to reprogram the memory discs in the computer. This fact had a major effect on courseware planning and the instructor qualification program since the developers had hoped to train the instructors on the mission profiles to be later used with students.

In an effort to overcome this setback, a concentrated courseware development effort began in Mar 81 and culminated in late April when the first of the test group instructors entered SIC training.

2. Instructor Checkout Phase: The instructor training started with four days of academic instruction covering the philosphy of positive training device utilization and simulator operating procedures. This was followed by a series of four missions in the IFS, first in the basic crew position, then observing a qualified instructor. This "piggybacking" with qualified instructors was a technique that

also worked well when replacement instructors were required. The instructors received evaluations of their ability to operate the IFS upon course completion. The first six simulator instructors completed training during the first week in June. During the remainder of the month, extensive ground work was laid to assure the flying schedule was prepared to absorb the control and test group students. A concerted effort was made during the entire development and test process to brief key 62 TAS staff members including the operations officer and commander every four to six weeks. The line instructors were briefed at least quarterly, throughout the program. As the newly qualified instructors began training their students, they reported news of the latest simulator developments to the other squadron instructors. This was helpful in creating a more positive attitude toward the ATD. The last 3 instructors completed their training the week prior to the start of student simulator training.

3. Training Phase: The first mission qualification students (class 81-012) began simulator training on 23 Jun 81. The last student crews completed simulator training on 1 Oct 81 and completed the course on 26 Oct 81. Attachment 6 contains all pertinent class dates.

Between each of the classes, Course Developers made revisions to students materials as required. For instance the formation profiles which were developed to be flown entirely in the wing position were changed to include formation and element lead position. The mission briefings were modified to match the changed profiles. The student study guide underwent several updates to include more information to better prepare the students for each mission. As the simulator missions were refined, pen and ink changes were made in the instructor guides to reflect the streamlining of the mission control inputs and changes to the profiles. As the instructors gained proficiency in simulator operation, more manually inserted malfunctions were added. Course Developers consolidated, printed, and distributed additional techniques covering simulator operation and failure trends. Training time was saved as the instructors were made aware of the experiences that preceding instructors documented on the mission reports.

Course Developers also produced a booklet of information extracted from the student guides, mission briefings, and low altitude approach books. Due to its compact size, this booklet was a handy and convenient source of data for student and instructor use during the training mission. In general, all possible aids were provided and improved throughout the program to insure peak efficiency of student training and maximum instructor acceptance of the program.

All students considered in this study attended the standard academic training program. For pilots, this meant five days of academics followed by an initial flying mission and then a final academic day. For the navigators, there were eight days in academics and then the first flight mission. The start dates for the two courses were aligned so that the first flight for both crew positions fell on the same day. A schedule for the academic phase of each course is in attachment 7.

Following academics, the students who made up the control group flew a scheduled program of eight missions and a flight evaluation. The actual number of missions an individual completed varied on the basis of proficiency advancement and operational factors such as maintenance delays or cancellations, weather conditions, and scheduling conflicts. A typical flight mission is made up of one high level SKE route to an airdrop, then two visual low level routes to airdrops.

Upon completion of academics, the simulator group began a block of four simulator missions. The test plan called for each crew to be scheduled for four simulator missions of four hours each. The actual number of days needed to complete this training varied due to simulator availability. The IFS was made available from 0400 to 1600 daily. Thus, on a given day, three crews were scheduled for one mission each.

A typical simulator mission was two high level routes using SKE procedures including Container Delivery System, equipment or personnel airdrops. A summary of the events which made up each mission is included in attachment 9-2. There was some variation in the events that individual students completed due to adjustments made to the mission profiles as a result of instructor and student feedback. Also, there was some flexibility built into the profiles to allow the instructors to concentrate training on individual student weaknesses.

At the end of the simulator phase, the simulator students flew a program of six flying missions and a checkride. The test program called for these training flights to concentrate on low level visual procedures. To accomplish this, the test group and the control group would fly in separate formations during the flying phase. After the test group's fourth flying mission, the two groups could be integrated into the same formation in order that the test group fly in SKE formations as a review prior to their checkrides. This plan proved largely unworkable for operational reasons, so the flight mission profiles flown were essentially the same for both groups.

4. Problems Encountered: Other than the resistance to change anticipated in a significant alteration of training, the following major problem areas were encountered during the test program: simulator maintenance, instructor attrition, and scheduling as it affected profile changes and proficiency advancement. These problems existed during the entire test program, and although they were overcome to the extent that the program was completed, they will continue to impact any full-scale incorporation of the simulator into mission qualification training. The background and impact of the problem areas will be considered here; possible solutions can be found in the Recommendations section.

a. Simulator Maintenance: The most obvious problem that arises when trying to create a new training syllabus, simultaneously with full-scale development of an ATD, is building a core of knowledge about the device. In the case of IFS maintenance, this was particularly true. The manning level had been fixed at a number of personnel to maintain the four old analog simulators plus two new devices. During the study period, this manning was required to maintain the four old simulators, the new IFS, and two Cockpit Procedures Trainers. Additionally there was a requirement to retrain maintenance personnel from analog to digital logic.

One area of maintenance particularly affected by manning and training was simulator software. During the study period there were literally hundreds of software deficiencies the status of which were still unresolved between Singer-Link, Aeronautical Systems Division (ASD), and the Data Base Engineering Prototype Site (DEPS) personnel. DEPS is made up of MAC assigned military maintenance personnel whose function is to correct deficiencies or modify computer software. In fact, due to the manning limitations and training level of those assigned to DEPS, very few discrepancies were corrected during the study period. Instructors were forced to ignore and train around the vast majority of software errors.

b. Instructor Attrition: In order that the test program have a fair chance for success, qualified and motivated instructors were required. In the inital stages of the program, experienced and motivated instructors were hand picked to attend the Simulator Instructor Course (SIC). The intention was to use the same instructors during the entire period to eliminate the variable of differing instructor abilities from the transfer of training study. There was no problem retaining qualified instructor navigators in the test program, but this was not true of instructor pilots.

The instructor pilot manning level in the 62 TAS is always critical, particularly during the summer vacation months. Of the six instructor pilots requested, only five could be made available. A course developer filled in as the sixth instructor. Only three line instructors and the course developer were available during the first SIC period. The other instructors received minimal training and were checked out just prior to the beginning of the test period.

Because classes start at two week intervals, instructors aligned with even numbered classes continue to fly with even numbered classes unless they skip a class. The same situation exists for instructors of odd numbered classes. Thus, an instructor would be lost for the two week period needed to adjust him from even to odd numbered classes and vice versa. His productivity during that two week layoff period would be sharply reduced due to the policy of instructor continuity. Students are allowed to fly with a maximum of two instructors during the course. Conservative scheduling dictates that the second or backup instructor be held in reserve in case the primary instructor is unable to complete his students' training. The simulator qualified instructors were not all aligned with even numbered test classes at the begining of the test period. These instructors were effectively lost to the test program until the last test class when the summer manning problem eased. In addition, reassignment of three qualified instructor pilots to other activities required training of replacements.

The instructor continuity policy, two week class start interval, tight summer manning and instructor pilot losses combined to severely limit the number of available simulator qualified instructors. Although the test plan recommended the use of the same instructors as much as possible to eliminate variability of instruction, this was not feasible for the pilots. Considerable extra effort was required to train replacements within the minimal amount of remaining time available on the device. In contrast to the pilot situation, the instructor navigator force remained relatively stable.

c. Scheduling and Profile Changes: Another variable that Course Developers endeavored to hold constant was t. . content of the flying mission profiles. These profiles are described in the Student Study Guide, attachment 8. The normal flight profiles start with a series of single ship low level routes to airdrops on the first mission. The second mission is planned to be several visual formation low level routes with airdrops and visual recoveries. From the third mission through evaluation, the profile contains a SKE formation route, airdrop and approach followed by two visual formation low level routes, airdrops and visual recoveries. For the study, Course Developers proposed a modification to this schedule. The first mission was to be the standard single ship profile. The second mission was to remain a visual formation profile. The test program differed from the existing profiles beginning at mission three. Mission three and four were proposed to be visual formation missions to balance the heavy SKE emphasis of four simulator missions. The remaining missions and the evaluation were to concentrate on SKE/visual profiles with the intent being balanced mission emphasis prior to the evaluation and course completion.

The profiles actually flown during the test program did not adhere closely to the guidelines for either the normal or the test program profiles. During the test classes, it was impossible to fly the test group independently of the control group. Local scheduling constraints promote a situation wherein each crew in training flies at more or less random intervals. It is by chance that the same crews fly together regularly. In addition, there is some interfly of crews between the two classes that are in the flying phase at any given time. Therefore, the mission profiles were generally combination SKE/visual missions from the third flight onward in order to fulfill training requirements of crews not in the test group. Only infrequently did all the test group aircrews make up a formation for which only visual formation events were planned. Discussion of the effects of the heavy emphasis on SKE by the test group will be considered under the Conclusions section.

The curriculum for the test program as described under Training Phase, was further effected by the 62 TAS scheduling constraints. About mid-July 1981, the 62 TAS changed the mission profiles away from the heavy formation emphasis toward more single ship events in response to an increase in the number of student navigators in training. This reordering of training emphasis effectively frustrated efforts to eliminate a variable from the test program.

Another area in which the planned and actual flying programs diverged was in the number of missions. The original sequence consisted of eight missions and an evaluation. The proposed test profile included six missions and an evaluation. The sequence that emerged from the scheduling const. .ints involved an average of seven flight missions and an evaluation. Because 62 TAS scheduling continued to contract with Current Operations scheduling for eight missions and an evaluation, instructors were presented with a dilemma. If the instructors judged that their students were ready to be evaluated at the end of the sixth mission, schedulers presented them with an option: 1. Take an unneeded, but allocated, seventh mission, or 2. Wait without flying until the scheduled evaluation. Instructors invariably accepted the extra mission rather than allow their students to go for as long as a week without flying prior to their checkride.

The end result was that although course developers had hoped to test a specific sequence of simulator and flying missions, scheduling produced a hybrid sequence of missions based on what existed and what was desired. The all-visual missions of the test group were never realized. Seven rather than six missions were actually flown, as a rule.

d. Scheduling and Proficiency Advancement: The courses administered by this training group operate under the concept of "proficiency advancement" (see Course Summary Document for C-130EP02P3 at Atch 9). Proficiency advancement is an operating theory under which each student must demonstrate proficiency at a task before he or she can advance to the next phase of training or be recommended for evaluation. When a student has demonstrated proficiency in academics, he or she advances to an ATD. When a student has demonstrated proficiency in an ATD, he or she advances to the flying training phase. When proficiency in the flying phase is attained, the student is recommended for the end-of-course evaluation regardless of the number of training missions flown. In the case of a rapidly advancing student this may require less flying training time. For slower students, additional training missions beyond the number of missions specified in the CSD may be required. This concept is in opposition to event oriented training whereby the student practices a task a standard number of times regardless of proficiency before advancing to the next phase. Proficiency advancement is efficient because each student practices each task only the number of times needed to reach course standards. It may permit a strong student to complete a course with fewer flying hours and allow a weak student additional training hours. It was hypothesized that a flying time comparison between test and control groups would be an indicator of the simulator's value. A progress evaluation to verify proficiency in the IFS before advancement to the flying phase was not possible because no part of the course evaluation could be administered in the IFS. The instructor recommendation was the sole determinant for advancement. Proficiency advancement was sharply limited in the flying phase by several factors.

The lack of true proficiency advancement was found to be based on a lack of flexibility in the scheduling of flying time, constraints arising from simultaneous training in multiple crew positions, an informal instructor rating system, and the constraints associated with accomplishing training events.

The scheduling of flying missions within the wing is a complicated process. There are four separate flying squadrons whose missions differ considerably. The limited flexibility in scheduling local training missions is caused by competition among higher command and AF directed missions for limited airframe resources. Thus, the 62 TAS was somewhat constrained in its ability to increase or decrease the number of missions needed each day. This situation limited the ability to accommodate the advancement of either strong or weak students.

Individual proficiency advancement is also hindered because there is simultaneous training being accomplished in more than one crew position on each aircraft. Although one crew position may not need the training time, there is concurrent training conducted in two other crew positions which normally cannot afford the loss of training time. An acceptable option would be to reallocate time within a crew position and class to a student advancing more slowly than the standard rate. This is sometimes done, but slow students are less common than the rapid advancer. Another option is for instructors who have graduated their students early to fly as a basic crewmember (e.g., an instructor navigator flying as a basic navigator.) If an instructor pilot recommends both his students for early graduation, then another pilot still must be found to occupy the empty seat beside the instructor pilot.

For the above reasons, instructors tend to be somewhat reluctant to recommend their students for early evaluation. Additionally, instructors are informally evaluated based on their student's evaluation performance. Additional student practice after proficiency has been demonstrated is sometimes looked upon by the instructor as "insurance" for a good checkride and more experience for the student.

The final factor working against true proficiency advancement is the number of prerequisites or conditions which must be met before an event can be practiced. For instance, a student pilot may have shown proficiency in all events except the ability to fly visual wing position. If the student could practice this event until proficiency is attained, then he would be ready for his checkride. But to practice this event a number of prerequisites must be met: the weather must be VMC, a VFR route must be scheduled, the student must be in a position to fly on the wing, the student's aircraft must be mechanically able to fly, the leader's aircraft must be ready to fly, etc. An empirically derived refly factor is built into the flying schedule to allow for weather and maintenance delays. This insures that needed flying time is available, but proficiency advancement has again been impaired.

All these factors tend to discourage proficiency advancement and cause the vast majority of students to fly about the same amount of time each class. This problem is further discussed in Conclusions.

RESULTS

The results of the test program will be presented in two parts. The first part will deal with the students and the second part will consider the instructors. While there is some overlap in these two areas, for the most part, they are distinct topics.

1. Students: The test program encompassed 30 student pilots and 15 student navigators (see attachment 10). The data compiled on these test subjects and the control group will be presented here.

a. Qualifications: Attachment 11 lists the average student experience level for pilots and navigators. The pilot students were well qualified with an average of 2118 flying hours (1631 hrs C-130). The copilots were mostly recent UPT graduates with an average of 438 total hours (42 hrs C-130). The navigators had a mix of experience levels ranging from 7000 hours to 140 hours with a total flying average of 1924 hours (650 hrs C-130).

b. Critiques: Attachment 12 is a numerical compilation of the student ratings derived from their critiques. Resul*s are shown as percentages of student choice on a 1 to 5 scale. Pages 1, 2 and 3 are the rating percentages for the critique administered immediately following the simulator phase. Pages 4, 5 and 6 represent responses to the critique administered at course completion. Page 3 and 6 are summaries of the ratings given at respective points in training. The ratings are consistently outstanding to excellent in most areas. Of particular interest were the overall ratings at course completion for critique items 6 and 7; 79% and 69% of the student rated these items outstanding or excellent respectively. These outstanding ratings indicate that the students felt the IFS represented a significant contribution to their training and provided a good transition to the flying phase of instruction.

In addition to the ratings, the students made comments on the critique forms listed at attachment 13. Some of the comments dealt with suggested changes in the missions, such as more or fewer malfunctions. These suggestions were acted upon when feasible and subsequently labeled "fixed". The size of the list was deceptively long. Some of the comments are contradictory and thus their validity is suspect. For instance, some students in class 81-016 recommended elimination of SKE lead time while others recommended an increase. The remainder of the unresolved comments will be studied further to improve the syllabus. As can be seen in attachment 14-2, the largest comment area was praise for the course as beneficial.

c. Training averages: Attachment 15 is the tabulated averages for the number of sorties and flying time expended for training classes during the summer of 1981. The chart shows that the test groups experienced fewer average sorties and flying time than the control groups, but not by the margin hypothesized in the Method section. This information is summarized under Comparison of Program Averages (figure 1). It should be noted for class 81-014 and 81-016 that, although the students completed training with fewer flying hours and number of sorties, the test group required more training days than the control group. The cause of this anomaly can be traced to the profile changes (discussed under Problems Encountered), and the effect of the increased number of training events genrated by the use of the ATD (discussed under Conclusions).

d. Evaluations: Attachments 16 and 18 are a complete listing of all the control group flight evaluation discrepancies for pilots and navigators respectively. Attachments 17 and 18 are complete listings of all test group flight evaluation discrepancies for pilots and navigators respectively. Attachments 19 and 20 are comparisons of discrepancy areas and frequencies between test and control groups o pilots and navigators respectively. This data shows significantly fewer discrepancies in the test group for SKE enroute formation position for pilots. SKE departure and SKE recovery discrepancy rates are approximately the same for control and test groups in relation to respective populations. No trend can be seen in navigator discrepancies when comparing test and control groups except in the area of SKE knowledge and use. Overall, SKE knowledge and formation position flying discrepancies appear to be reduced by the inclusion of IFS missions in the syllabus.

e. Test and control group comparison: Also in figure 1, the overall percentages show that test group pilot and navigator students completed training without discrepancies more often than those in the control group. The test group accomplished this with fewer flying sorties and hours. There seems to be an insignificant difference in the number of days in training between test and control groups for the pilots. The navigators, in contrast, show a difference of about four days. The significance of all these areas with reference to the utility of the ATD with be further discussed in Conclusions.

COMPARISON OF PROGRAM AVERAGES

Statistical Area	PILOTS		NAVIGATORS	
	TEST GROUP	CONTROL GROUP	TEST GROUP	CONTROL GROUP
Ranks				
2LT	9	45	8	13
1LT	1	7	0	2
CAPT	15	37	1	4
MAJ	4	16	4	1
LTC	1	5	2	0
TOTAL NO. OF SUBJECTS	30	110	15	20
SORTIES PRIOR TO RECOMMENDATION	7.2	8.8	7.6	8.4
HOURS PRIOR TO RECOMMENDATION	32.1	38.0	N/A*	N/A*
# OF DAYS TO COMPLETE FLY PHASE	20.7	20.3	22.6	18.3
CHECKRIDE RESULTS				
Q-1	26 - 87%	79 - 72%	11 - 73%	14 - 70%
Q-1/2	1 - 03%	21 - 19%	0 - 00%	3 - 15%
Q-2	3 - 10%	6 - 05%	1 - 06%	1 - 05%
Q-3	0 - 00%	4 - 04%	3 - 20%	2 - 10%

* Data not available. Not considered relevant due to use of only pilot data for flying program scheduling.

Figure 1

2. INSTRUCTORS: The Instructor Mission Report ratings (sample at attachment 2) are summarized in attachment 21. Based on this data, there seems to be no identifiable trend in the usage pattern of the simulator. Reliability rates for the device will be discussed later in this section. The instructor pilots and navigators indicated their perceptions of device operation and training value with a numeric rating. The data generally reflects a "good" rating for device operation and a "good" to "excellent" rating for training accomplished. There is a high correlation between the device operation rating and the training accomplished rating.

a. Mission reports: Attachment 22 lists the comments compiled from the instructor mission reports. Also indicated are the frequency of the comment, area of responsibility and the status. Numbers of comments declined over the course of the test as the program was "debugged". Attachment 23 is a listing of maintenance related comments extracted from all of the instructor mission reports and was correlated with frequency of occurrence and numbers of ineffective sorties. The data shows that of the 60 simulator periods required to support 15 student crews (3 classes x 4 crews x 4 missions + 1 class x 4 crews x 3 missions), 10 periods were lost and had to be rescheduled for an overall ineffective rate of 17%. There seems to be a decline in the number of maintenance related comments over the course of the program, but the number of ineffective sorties seems constant. The predominant maintenance problem varied from class to class. For instance, hydraulic control loading was a problem during class 81-014 while motion platform jerking and software problems affected classes 81-016 and 81-018 respectively. The problems listed are fairly evenly distributed between hardware and software. Additional training time was lost or the content degraded by less significant equipment malfunctions that went unrecorded.

b. Instructor meeting: Attachment 24 lists the unresolved instructor comments. As with the unresolved student comments, some instructor comments on the same topic are contradictory and their validity is questionable. To resolve these contradictions and other comments, an after action meeting was held on 30 Oct 81 with all available instructors. Topics and discussion summary are listed in attachment 25. The remainder of the comments will also be studied further to improve the syllabus and operations/maintenance interaction.

Conclusions

1. Primary Findings

a. ansfer of Training: A transfer of training ratio of .48 was originally hypothesized. Based on a program of four simulator missions, this rate would suggest an approximate savings of two flight missions while holding training standards constant. The subjective and objective data collected by this study, with some qualification, support the hypothesis.

The overall flight evaluation results (see figure 1) clearly show that Q-1 rates were not degraded with the adoption of the ATD. The pilot data even suggests a slight improvement in this rate. In the specific subareas related to SKE procedures there was a significant improvement for both pilots and navigators. For pilots there was a 59% decrease in the number of SKE related discrepancies. For navigators there was a 100% decrease (the actual number of discrepancies declined from two to zero).

The number of aircraft missions flown prior to evaluation (sorties use rate) also declined with the addition of the ATD. The decrease was 1.6 and .8 sorties for the pilots and navigators respectively. Although this decrease does not fully support the hypothesised transfer of training rate, there is evidence that this rate was adversely affected by factors unrelated to training. This subject is discussed at length under Weaknesses of the Study in this section.

Student and instructor feedback, as derived from critiques and mission reports, strongly supported the use of the ATD for SKE training. On 30 Oct 81 an after action meeting was held with all available instructors who had participated in the SKE test. The consensus recommendation for future simulator use was a program of four simulator missions and six or seven flying missions plus a flight evaluation.

b. Course Structure: Data from this study suggests that a block of simulator missions is not the most effective or efficient structure for use of the ATD.

The addition of simulator missions to the training program increases the total number of training events in the flying training phase from fourteen to sixteen. This increase in the number of events caused an increase in the number of days required by the test group to complete the course (see figure 1). In the interests of safety, instructors are usually restricted to a maximum of three actual flying missions per week. By integrating simulator missions in the flying phase the greatest number of training events can be accomplished in the time allotted.

The integrated structure may also be the most effective use of the ATD from a transfer of training point of view. Instructors noted a weakness in the blocked schedule used for the test. The test plan called for a sequence of two visual flight missions, four SKE simulator missions, then the remaining flying missions. Instructors pointed out that students were inclined to forget visual procedures during the concentration on SKE in the simulator. Instructors felt an integrated approach would make better use of all missions. This was the recommendation of the instructors attending the after action meeting.

c. Courseware: Courseware includes a variety of guides and job aids designed to assist the students and instructors in the use of the ATD. One of the objectives of this study was to prove these support materials. To some degree this effort was hampered because much of the courseware was revised in response to student and instructor comment during the test. Thus, the courseware as an independent test variable was not held constant. However, based on positive feedback from instructors and students, plus the positive transfer of training rate for the program, the test basically proved the efficiency and validity of the materials. Further testing for validation is suggested under Recommendations.

d. Instructor Training: Sufficient simulator instructors were qualified to complete the study. This was the first objective of the instructor qualification program. There was no specific data collected on the relative competence of these instructors but it can be assumed from the positive overall study results that minimum competence was attained. There were two programs used for instructor qualification. The first was a highly structured program including an academic block and a hands-on training block. The instructors' after action meeting recommended specific improvements to this program. They are: 1. Reduce the length of the academic phase, 2. Increase the amount of hands-on training, and 3. Include training missions with actual students during hands-on training. A less formal check out program was used to make up for instructor attrition during the test. This program involved "piggy backing" instructor candidates on training missions with fully qualified instructors. Although this program is less desirable than the first, it did meet the need for qualified instructors.

2. Additional Findings

a. Maintenance Support: ATD maintenance had a major impact on the test program. The test was hampered by hardware and software deficiencies throughout its run. Some deficiencies were the result of incorrect initial design while others were due to maintenance manning and skill levels.

Some important training capabilities were not designed into the ATD. For instance, one important training task is performance of SKE procedure turn recoveries in the wing position. A capability of the simulator to train this task was never contracted for and thus never designed. As as example, trainers desired to use the concept of "backward chaining". This concept refers to a way of training a task which is made up of a series of chained subtasks. The final subtask is practiced first, then the last two subtasks, then the last three, and so on until the entire task is practiced. This concept works particularly well when the last subtask is the most difficult, since the last subtask is the most practiced. In airdrop training the final subtasks are the most difficult to master and thus this technique could have proved very useful. However, the design of the SKE computer program required the triggers of a departure, climb, descent and slowdown in order to make an airdrop. Multiple approaches to the drop zone cannot be accomplished without flying an entire route. At some future date this basic programming may be rewritten, but these training events cannot be accomplished at this time.

Some deficiencies remain uncorrected due to the low maintenance manning and training levels which currently exist. Manning levels for the IFS will improve as the old simulators are decommissioned. It is to be hoped that knowledge levels in the maintenance ranks will increase with the conversion of personnel from analog to digital systems and with more experience maintaining this device.

In addition to deficiencies in the design and initial programming of the device, some other features of the device were unuseable. The automatic profiles, performance measurement and auto message features all had a questionable reliability record. Their intermittent operation caused a degree of frustration in the instructor ranks. A large number of software changes will be required before these features are useable.

The user/trainer should not expect perfect performance from a prototype ATD during the installation and testing phase. Eventually, logistic and maintenance support should meet expectations. Long procurement lead times are to be expected on software and hardware items for a new device. The procurement contract clauses that specify testing in the plant and at the site may provide some protection from defect in the ATD, but they also tend to draw out the time at which maintenance and logistic support will catch up.

b. Weaknesses of the study: In the method section, Course Developers proposed to extract results from the LRAFB Form 0]lf/1 (atch 3) to support collection of objective data. This was not done because of the limited value of this data. Whenever an evaluator remembered to complete the evaluation column of this form, all areas applicable to SKE formation position and procedures were usually graded at the minimum level of proficiency. The few evaluators who avoided this central tendency and showed some variation in performance and knowledge levels do not represent a numerically significant group for study.

This study has limited value because of the manner in which the objective data was collected. In the pilot mission qualification course, there are no specified criteria for the required level of proficiency in flying the SKE wing position. This position is flown 4,000 feet in trail for the number 2 wingman and 8,000 feet in trail for number 3. A criterion such as "maintain 4,000 feet in trail as number 2 wingman ± 1,000 feet" does not exist. There are no specified limits in MACR 60-1, Aircrew Standardization Evaluation Program, in relation to acceptable limits of formation position. The SKE subareas on the evaluator work sheet (see atch 26 and 27) are graded satisfactory or unsatisfactory. For this study, Course Developers have been forced to rely on subjective evaluator judgments of formation position and use the checkride pass/fail rates as objective data.

The control of variables was a major weakness of this study. Too many conditions in the training program were allowed to change over the course of the test. Training profiles, numbers of sorties, instructor personnel and other proposed parameters discussed under Problems and Results varied significantly. The test program missions in the new simulator were developed to complement the existing flying program. If the simulator had been an established training device, a change in training policy would have required validation of a modified flying program. Neither of these approaches is optimal. A training syllabus that teaches required tasks should be prepared and then training time apportioned to the ATD's or flying training based on the most effective and efficient utilization of these resources. Exercise of control over all phases of the training program design would have insured more accurate test results.

Two additional weak areas deserve discussion: proficiency advancement and the small number of test subjects. As discussed under Procedures, advancement was adversely affected by current scheduling practices. As discussed in this section, proficiency is rather ill-defined and event oriented. When the student has flown all the required events listed on the grade sheet on the required number of flying missions established by the Course Summary Document, he is generally considered proficient. In examining the term "proficiency advancement", as it was applied to the test program, it is evident that "proficiency" was a subjective evaluation with little basis in objective fact and that "advancement" was inflexibly based on the student's flying schedule. Neither of these problems could be overcome in the test program methodology by the relatively small number of test subjects. See Recommendations for applicability to future syllabi and any further investigations.

c. Instructor utilization: A final point to ensure continued training effectiveness of this ATD is the single instructor concept. Even though this variable has not been adequately studied, there appears to be an increase in effectiveness when a single instructor is responsible for both simulator and flying training. This allows instruction given in the simulator to be more compatible with that given in the aircraft. This should reduce any possible negative transfer that could occur as a result of instructor idiosyncrasies (10).

3. Recommendations

a. Primary recommendations: Until a significant amount of further data can be compiled from students in a mission training curriculum incorporating the IFS, the following recommendations are made regarding that curriculum:

(1) The IFS provides good initial Stationkeeping Equipment training and should be integrated throughout the flying phase of instruction.

(2) The course of instruction for pilots and navigators following academics should consist of four simulator missions interspersed with six flight missions and an evaluation.

(3) The simulator instructor candidates should receive one day of academic training, two simulator missions without students, three training missions with students and an evaluation (if required). Instructor training should be accomplished using the training syllabus for the instructor's course (11).

(4) The courseware that was developed for this test program should be formalized and used until validation on a statistically significant student population is completed.

(5) Greater emphasis on true proficiency advancement should be supported by managers and supervisors. Training should be less event oriented and scheduling handled with more flexibility.

b. Additional recommendations: The following recommendations are of less immediate importance, but should also be implemented:

(1) Specific performance criteria should be established for tasks trained in simulator and flying training for the purpose of testing and validation. These criteria will promote standardized evaluation of student performance by instructors and evaluators.

(2) Continuing studies should investigate the rate of proficiency attainment in simulator and flying training to identify the best media for instruction.

(3) Adequate ATD time should be allocated for course development efforts.

(4) Continuing efforts should be made to improve ATD maintenance support and ATD reliability.

(5) A concerted effort should be made to improve IFS software so that all design capabilities of the device are fully usable. Refining these features will ease instructor workloads.

(6) Every effort should be made to increase supervisory awareness and support for test programs and validation studies.

It is through periodic management reviews and studies of this type that training policies are examined and constructive changes made to improve training techniques.

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LIST OF ATTACHMENTS

ATCH NO.	TITLE
1.	Student Target Population
2.	Simulator Mission Report
3.	LRAFB Form O-91f Training Record and Summary Sheet
4.	Simulator Instructor Guide (excerpt)
5.	Preliminary Planning Document
6.	Pilot and Navigator Class Schedule
7.	Pilot and Navigator Academic Schedule
8.	Simulator Student Study Guide
9.	Course Summary Document (C-130EP02P3)
10.	Student Performance Data
11.	Student Experience Level
12.	Student Critique Ratings
13.	Student Critique Comments
14.	Unresolved Student Comments
15.	Pilot Averages
16.	Checkride Discrepancies (Control Group)
17.	Checkride Discrepancies (Test Group)
18.	Checkride Discrepancies (Navigators)
19.	Summary of Discrepancies (Pilots)
20.	Summary of Discrepancies (Navigators)
21.	Summary of Mission Report Ratings
22.	Summary of Mission Report Comments
23.	Reported Maintenance Problems
24.	Unresolved Instructor Comment Summary
25.	Memo - Simulator Instructor Meeting
26.	MAC Form 4C - Pilot Flight Evaluation Worksheet
27.	MAC Form 48 - Navigator Flight Evaluation Worksheet

STUDENT TARGET POPULATION

Most students arriving at the formal school are motivated and enthusiastic about completing the school and becoming fully qualified in their crew positions. The anticipation to fly is very strong. Most are looking foward to working their way up through the military system. Undergraduate Pilot Training/Undergraduate Navigator Training (UPT, UNT) graduates are entering their first operational aircraft with numerous complicated systems to master. Most are anxious to learn. Pilot upgrades are presently qualified in the aircraft desiring to become mission ready aircraft commanders. Experienced pilots and navigators returning from non-flying duty or changing aircraft are ambivalent about the program and flying in general.

Most students are highly educated and are qualified in the aircraft since they are coming from the initial qualification course. Approximately 50% of the students are UPT/UNT graduates with 30-40 flying hours in the aircraft. 20% are experienced crewmembers with no C-130 experience and approximately 20% are previously qualified C-130 crewmembers.

Instructor	PHASE II SIMULATOR MISSION REPORT		Date/Time
Student P CP Nav	Demo Function Used Not Used	Operating Mode Indep Integ	Hours Used 1 2 3 4
Student P CP Nav	Mission no. 1 2 3 4 X	Device Operation Poor Good Exc	Trng Accomplished Poor Good Exc

This form is to be filled out on completion of each SKE simulator mission and returned to 34TATG/TTG (Course Development). This mission report is used by simulator instructors to document recommendations for simulator training improvements. These improvements include, but are not limited to, the following:

Instructor guides

Mission profiles

Student study guides

Mission briefings

Simulator Maintenance

Problems/Comments:

GRADING STANDARDS

PERFORMANCE

1. CAN DO PARTS OF TASK, NEEDS ASSISTANCE TO COMPLETE THE TASK.
2. CAN DO MOST PARTS OF TASK, NEEDS ASSISTANCE TO COMPLETE THE TASK EFFICIENTLY AND ACCURATELY.
3. PERFORMS THE COMPLETE TASK SAFELY.
4. PERFORMS THE COMPLETE TASK SAFELY AND WITH A HIGH DEGREE OF SKILL.

KNOWLEDGE

A. IDENTIFIES BASIC FACTS.
B. IDENTIFIES BASIC PRINCIPLES AND SOURCE DATA.
C. ANALYZES FACTS AND/OR APPLIES PRINCIPLES TO DRAW CORRECT CONCLUSIONS.
D. EVALUATES CONDITIONS, PREDICTS AND IDENTIFIES PROBLEMS, AND MAKES PROPER DECISIONS.

OTHERS

I. IMPLIED WITHIN THE OBJECTIVE STATEMENT.
X. ORIENTATION/FAMILIARIZATION.

* TRAINING EVENT MAY BE PERFORMED THROUGH SIMULATION – KNOWLEDGE MUST BE GRADED

REQUIREMENTS	FLIGHT # - PERFORMANCE													K	STANDARD				FLT EVAL	
															AC		CP			
	1	2	3	4	5	6	7	8	9	10	11	12	13		P	K	P	K	P	K
Tactical Mission Briefing															3	C	X	B		
Briefings, Other															3	C	X	B		
Formation Taxi (Wing Position)															3	C	X	B		
Visual Takeoff (Lead)															2	B	*2	B		
Visual Takeoff and Assembly (Wing)															3	C	3	C		
SKE Takeoff (Lead)															2	B	*2	B		
SKE Takeoff and Assembly (Wing)															3	C	3	C		
Visual Enroute Formation (Lead)															2	B	2	B		
Visual Enroute Formation (#2 Position Day)															3	C	3	C		
Visual Enroute Formation (#2 Position Night)															3	C	3	C		
Visual Enroute Formation (#3 Position Day)															3	C	3	C		
Visual Enroute Formation (#3 Position Night)															3	C	3	C		
SKE Enroute Formation (Lead)															2	B	2	B		
SKE Enroute Formation (Wing)															3	C	3	C		
Visual Formation (2nd or 3rd Element Lead)															2	B	*2	B		
SKE Formation (2nd or 3rd Element Lead)															2	B	*2	B		
Low Level Navigation															3	C	3	C		
Visual Slowdown, Run-In and Release															3	C	3	C		
SKE Slowdown, Run-In and Release															3	C	3	C		
Heavy Equipment - Actual															3	C	*3	C		
SATB (H)															*3	C	3	C		
CDS - Actual (Min 12,000 lbs)															3	C	*3	C		
SATB (C)															*3	C	3	C		
Personnel/SATB (P)															3	C	3	C		
Visual Escape From Drop Zone															3	C	3	C		
SKE Escape From Drop Zone															3	C	3	C		
Overhead (Lead/Single Ship)															2	B	*2	B		
Overhead (Wing)															3	C	3	C		
Downwind (Lead/Single Ship)															2	B	*2	B		
Downwind (Wing)															3	C	3	C		
SKE Straight-In Approach (Lead)															2	B	*2	B		
SKE Straight-In Approach (Wing)															3	C	3	C		
SKE Approach With Procedure Turn (Lead)															2	B	*2	B		
SKE Approach With Procedure Turn (Wing)															3	C	3	C		
Formation Full Stop Landing															3	C	*3	C		
Assault Takeoff (Day)															3	C	3	C		
Assault Landing (Day)															3	C	3	C		
Assault Landing (Night)															3	C	3	C		
Assault Landing (Heavyweight)															3	C	*3	C		
Aborted Assault Takeoff															3	C	*3	C		
Combat Offload															3	C	X	C		
Airdrop Emergency Procedures															*3	C	*3	C		
Crew Coordination															3	C	3	C		
Radio Procedures															3	C	3	C		
Simulated Engine-Out Takeoff															3	C	X	B		
Windmill Taxi Start															3	C	X	B		
Simulated Inadvertent WX Penetration w/SKE															3	C	*3	C		
Simulated Inadvertent WX Penetration wo/SKE															3	C	*3	C		

TRAINING RECORD **NAVIGATOR MISSION QUALIFICATION COURSE** COURSE NUMBER C-130EP02NR

NAME	RANK	CLASS NO.	PREVIOUS TACTICAL QUALIFICATIONS AIRDROP [ ] C-130 [ ] SKE/AWARDS [ ]

MSN NO.	MSN DATE	MSN TIME	TOTAL TIME	INSTRUCTOR NAME	STUDENT INITIALS	SPECIAL TRAINING REQUIREMENTS	ACTUAL VERBAL	Instruct Initials	EVENT DATE
1						1000 FT AGL DAY RTE			
2						500 FT AGL DAY RTE			
3						COMBAT/SPEED OFFLD	*		
4						INVERTED L AIRDROP	*		
5						TACTICAL MSN BRIEF	*		
6						CERTIFICATION OF GROUND SCHOOL COMPLETION			
7						SIGN:			
8						TAC EXAM SCORES	OPEN	CLOSED	
9						RECOMMEND EVALUATION FLIGHT FOR NAV-MSN QUAL			
10						SIGN:			
11						FLIGHT EVALUATION COMPLETED SAT [ ] UNSAT [ ]			
12						SIGN:			

PERFORMANCE STD

1. CAN DO PARTS OF TASK, NEEDS ASSISTANCE TO COMPLETE THE TASK
2. CAN DO MOST PARTS OF TASK, NEEDS ASSISTANCE TO COMPLETE THE TASK EFFICIENTLY AND ACCURATELY
3. PERFORMS THE COMPLETE TASK SAFELY
4. PERFORMS THE COMPLETE TASK SAFELY AND WITH A HIGH DEGREE OF SKILL

KNOWLEDGE STD

A. IDENTIFIES BASIC FACTS.
B. IDENTIFIES BASIC PRINCIPLES AND SOURCE DATA
C. ANALYZES FACTS AND/OR APPLIES PRINCIPLES TO DRAW CORRECT CONCLUSIONS
D. EVALUATES CONDITIONS, PREDICTS AND IDENTIFIES PROBLEMS, AND MAKES PROPER DECISIONS

I. IMPLIED WITHIN OBJECTIVE STATEMENT (NOT USED FOR THIS COURSE)
X. ORIENTATION/FAMILIARIZATION (USE WHEN A TASK IS DEMONSTRATED TO THE STUDENT)
* TASK PERFORMANCE IS OPTIONAL-ONLY THE KNOWLEDGE STANDARD MUST BE GRADED

	TRAINING REQUIREMENTS	1 TR	2	1 FT	2	3	4	5	6	7	8	9	10	11	12	K	STD P	STD K	EVAL P	EVAL K
MSN PLANNING	MISSION COORDINATION																3	C		
	FLIGHT PLAN																3	C		
	CARP COMPUTATIONS																3	C		
	CARP PLOTTING/OVERLAYS																3	C		
	NAVIGATION CHARTS																3	C		
DEPT	PREFLIGHT																3	C		
	DEPARTURE CHECKLISTS																3	C		
	DEPARTURE COORDINATION																3	C		
ENROUTE AND AIRDROP PHASE	TURN POINT PROCEDURES																3	C		
	SYSTEMS INTEGRATION																3	C		
	MAPREADING																3	C		
	RADAR																3	C		
	NAVIGATION RADIOS																3	C		
	TIME CONTROL																3	C		
	SKE LEAD PROCEDURES																3	C		
	SKE INTRAIL PROCEDURES																3	C		
	AIRDROP WARNINGS & CHECKLISTS																3	C		
	DROP ZONE ALIGNMENT																3	C		
	AIRDROP ACCURACY																3	C		

LITTLE ROCK AFB FORM MAR 80 0-91i PREVIOUS EDITION IS OBSOLETE

MISSION NUMBER

REMARKS

FLYING TIME
SEAT / MSN

ROUTE				
DAY/NT				
SKE/VIS				
POS				
LOAD				
SCORE				
ARA				

INSTRUCTOR'S NAME

STUDENT'S INITIALS

MISSION NUMBER

REMARKS

FLYING TIME
SEAT / MSN

ROUTE				
DAY/NT				
SKE/VIS				
POS				
LOAD				
SCORE				
ARA				

INSTRUCTOR'S NAME

STUDENT'S INITIALS

MISSION NUMBER

REMARKS:

FLYING TIME
SEAT / MSN

ROUTE				
DAY/NT				
SKE/VIS				
POS				
LOAD				
SCORE				
ARA				

INSTRUCTOR'S NAME

STUDENT'S INITIALS

FOR INSTRUCTIONAL PURPOSES ONLY

SECTION IV

INSTRUCTOR GUIDE

SIMULATOR TRAINING PHASE

CRITERION OBJECTIVE: Given a simulator, appropriate publications, airdrop materials and tactical routes, accomplish all tasks necessary to properly execute a tactical SKE formation airdrop mission. Accomplish all tasks and training requirements with reference to applicable publications and achieve proficiency levels specified for mission qualification pilots in CSD C-130EP02P3 and LRAFB Form 0-91f.

TRAINING AIDS: C-130E simulator, Instructor Guide and Student Study Guide.

REFERENCE MATERIALS: T.O. 1C-130B-1, T.O. 1C-130B-1-1, T.O. 1C-130B-1CL-1, AFR 60-16, AFR 51-37, MACR 55-130, CSD C-130EP02P3 and Student Study Guide/Handouts.

GENERAL:

1. The simulator training phase will be initiated after five days of academic training and terminate prior to the third flying training mission.

   a. It consists of six working days with all training conducted on a student/instructor ratio of 2/1.

   b. All training is conducted under the supervision of an assigned instructor pilot.

      (1) The student crew will consist of two student pilots and normally a student navigator.

      (2) The student/instructor crew will normally be kept intact throughout the simulator and flying phases of training.

   c. The student receives four simulator missions with ground training provided when not scheduled for the simulator.

      (1) A one hour premission briefing will be held prior to each scheduled simulator mission. This briefing will contain the elements of a serial lead briefing.

      (2) Show time will be 1+15 prior to scheduled simulator time.

2. Simulator training should be as realistic as possible; therefore, motion should be used on all missions. Students should conduct themselves as if they were on an actual flight.

   a. The students will wear flight clothing, hook up/check oxygen equipment, and strap-in as a safety precaution.

   b. The students will bring the following equipment for all simulator missions:

      (1) Headset.

      (2) Helmet/oxygen mask.

      (3) MACR 55-130, aircraft and airdrop checklists.

      (4) Student Study guide.

      (5) Flight clothing.

   c. Food, drink and smoking are prohibited in the simulator.

INSTRUCTOR GUIDANCE:

1. Instructor Guide.

   a. This guide serves as a replacement for section IV of the instructor guide oated 1 May 81 for the purposes of course validation. The sequence of ground and flying training missions has been altered for the purposes of the validation.

b. This instructor guide contains mission profiles for each lesson. Each profile includes a script for conducting the lesson that shows the appropriate cues, actions to be taken and function of those actions. Instruction should be tailored to suit the sequence of events during the mission. Instructors are encouraged to provide meaningful instruction on related subject matter as the opportunity presents itself.

c. Instructor crews are requested to adhere to the sequence and content of the individual lesson plans at all times to achieve maximum training. The criterion of your effectiveness as a simulator instructor is this: after training, can the student satisfactorily accomplish a SKE formation airdrop mission? It is not enough just to debrief the student on his weak areas and explain the correct procedures. The student must actually practice the procedures until he can accomplish them correctly.

2. Student training records.

a. LRAFB Form 0-91f (Training Record) reflects task listing and standards for pilot simulator training.

(1) The heading blocks are self-explanatory. Designate the missions conducted in the simulator by entering "Sim" under "Seat Time" on the upper portion of the grade sheet. The simulator missions are treated exactly like flying missions in terms of knowledge and performance grading on the remainder of the form.

(2) The lower portion reflects training tasks to be accomplished and the standards which constitute satisfactory performance and knowledge levels for this phase of training.

(3) The student should achieve required knowledge and performance levels prior to progressing to the flying phase of SKE training.

. LRAFB Form 0-92 (Mission Summary Sheet) is used as necessary to provide detailed comments on student progress. Enter "Sim", the date, and the mission number in the "Mission number" space provided.

3. Progress Check.

a. The simulator progress check will be conducted by an instructor pilot other than the student's assigned instructor.

b. Students train as a crew but will qualify on an individual basis.

c. The progress check will be a sampling of a student's overall capability. The student's proficiency and knowledge levels will be entered in the LRAFB Form 0-91f for that mission for those tasks covered.

d. Students failing to achieve required proficiency will be referred to the course manager during course validation.

e. The instructor pilot conducting the progress check will debrief all areas. Upon satisfactory completion, he will assure that the student training records arrive at the squadron (building 236) prior to the student's next flight.

CHANGES: Recommended changes, additions, or deletions for simulator missions will be submitted as proposed changes to the 34TATG/IDC (Course Manager) for approval and courseware development.

MISSION PROFILE I

DEMONSTRATIONS AT LITTLE ROCK AFB AND ALL-AMERICAN DZ. DEMONSTRATION OF SKE TAKEOFF, BENIT DEPARTURE, ASSEMBLY, ACCELERATION, AND CLIMB TO 7000 FEET MSL. DEMONSTRATION OF SKE RUN-IN FROM IP THROUGH 15,000 POUND HEAVY EQUIPMENT AIRDROP, ESCAPE, AND ACCELERATION. DEMONSTRATION OF BRAVO SKE RECOVERY FROM BASE LEG THROUGH ILS FINAL AND LANDING.

LITTLE ROCK AFB TO ALL-AMERICAN DZ. DEPART LITTLE ROCK AFB RUNWAY 25 VIA BENIT DEPARTURE TO AA29 ROUTE USING SKE FORMATION PROCEDURES AS NUMBER TWO TO ALL-AMERICAN DZ FOR A PERSONNEL AIRDROP, BRAVO STRAIGHT-IN ILS RECOVERY AT LITTLE ROCK AFB.

TIME	DURATION	ACTIVITIES
-1+30		Navigator show time.
-1+00		Pilot show time.
-0+45		Brief time.
-0+05		Crew assembles at IFS.
0+00		Simulator mission start time.
+0+15	0+15	Stations time (mission loading completed).
+0+25	0+10	Ready to run DEMO 7 (pre-briefing completed).
+0+50	0+25	Ready to run DEMO 8 (critique of previous demo and pre-briefing of next demo completed).
+1+15	0+25	Ready to run DEMO 9 (critique of previous demo and pre-briefing of next demo completed).
+1+45	0+30	Ready for takeoff (critique of previous demo, student break, mission loading, BITE check, Before Takeoff and Line-Up Checklists completed. Initialized engines running in takeoff position).
+2+40	0+55	TOT for airdrop (Benit 6 departure, AA29 route, and personnel airdrop completed).
+3+05	0+25	Acceleration for recovery (replay last 7½ minutes to airdrop and re-IC for second run-in completed).
+3+30	0+25	Landing (formation escape and Bravo recovery straight-in ILS completed) (replay/re-IC optional).

CUE	ACTION	FUNCTION
Start mission #1.	Review AFTO Form 781.	Locate inoperative systems.
	Set up cockpit controls.	Detect problems that might hinder student performance or mission completion.
	Gear - Down. Flaps - 50%. Condition levers - Run. Generators - On. Inverters - On. Fuel system - Tank to engine. Hydraulic pumps - On. Parking brake - Set. SKE - As required. Circuit breakers - In.	NOTE: SKE is not operable for FCI check or BITE check while IFS is in PROB FREEZE.
	Adjust seat and strap-in.	Avoid motion system injury.
	Set up IOS.	
	Adjust CRT display intensities. Adjust floodlight intensities. Adjust keyboard lighting. Overhead lighting (on/off). Do not adjust temperature or humidity. DRLMS - Light on in IFS or SNS.	
	Take control of CRT.	
	INIT SET, 01, INSERT.	Initialize to LRF.
	LINE 05, 3, INSERT.	Start engines and position at end of runway 25.
	DEMO, DISP.	Call up demonstration.
	DEMO 07, INSERT.	NOTE: Pre-brief first demo.
Ready for demo.	LINE 16, INSERT.	NOTE: Warn students to remain clear of flight controls during demo run.
PROB FRZ light steady.	PROB FRZ, OFF.	NOTE: IOS will not accept commands during demo.

CUE	ACTION	FUNCTION
PROB FRZ light illuminated/ formation level at 7000 feet.		Demo completed. NOTE: Present applicable critique of demo and pre-brief the next demo.
Ready for demo.	DEMO 08, INSERT.	Call up DEMO 8.
	LINE 16, INSERT.	
PROB FRZ light steady.	PROB FRZ, OFF.	NOTE: Present applicable instruction for demo, IP through acceleration.
PROB FRZ light illuminated/ formation reassembled.		DEMO 8 completed. NOTE: Present applicable critique of demo and pre-brief the next demo.
Ready for demo.	DEMO 09, INSERT.	Call up DEMO 9.
	LINE 16, INSERT.	
PROB FRZ light steady.	PROB FRZ, OFF.	NOTE: Present applicable instruction for demo, base leg through landing.
PROB FRZ light illuminated/ IFS landed.		DEMO 9 completed. NOTE: Present applicable critique of demo. Student break.
Restart mission.	FORM 10, INSERT.	Activate formation profile with All-American DZ.
	AFLD DZ, DISP, ADV.	
	LINE 03 311, INSERT.	Change field elevation.
	LINE 04, 1, INSERT.	Set environmental conditions.
	AUTO MSG, 01, INSERT.	NOTE: Instructors cannot monitor these transmissions.
	SYS, DISP, ADV.	
	LINE 13, 1, INSERT.	Reservice aircraft systems.
	PRGM MALF, DISP.	
	LINE 01, 0, INSERT.	Delete programmed malfunctions.
	HRD CPY, DISP.	

Preliminary Planning Document

This is a compilation of factors considered in the preliminary planning of the Instrument Flight Simulator Station Keeping Equipment training missions during the month of October 1980.

Assumptions

1. The Instrument Flight Simulator (IFS) will be on base and in position on or after 1 Jan 81.

2. The IFS will be made available for use by the RTU at least four hours per day alternating 30 day periods with the 16th TATS.

3. Pending the integration of the General Electric visual systems, Station Keeping Equipment procedures is the only subject matter that is appropriate for RTU training.

4. The IFS will be programmed by AMS personnel. This will be necessary since current routes left over from acceptance testing are undesirable.

5. Backward chaining is not an option available for Phase II training.

6. Emergency procedure training is inappropriate during initial missions but should be included on the last mission in the form of airdrop malfunctions.

7. AA 27 route is particularly useful for left turn practice while AA 29 route is useful for right turn practice.

Scenario

Pilot and navigator academic training will be completed as usual. As the final stage of academics, the students will then fly a day singleship visual mission and a day visual formation mission. Winter weather permitting, the pilot students will receive another day of SKE academic training before flying SKE formation. At this point the class will be divided into two groups. One group will be the Simulator Group and will receive their SKE training in the simulator. The other group, the Control Group, will receive their training in the aircraft.

The Control Group will continue to train exclusively in the aircraft flying roughly six additional missions of a mixed SKE/visual profile. This training will be followed by the usual end-of-course evaluation. The Simulator Group will fly two to four IFS missions before returning to the aircraft for three exclusively visual formation missions and one SKE/visual mixed profile prior to a checkride. IFS training should follow closely on the heels of SKE academics and follow the first two visual missions. The decision to fly two to four simulator missions during winter will be dependent on the availability of visual formation training. The profiles established should therefore allow flexibility in the number and type to be flown. The first mission should be two hours long and the subsequent three missions should be four hours long. Periodic breaks will be necessary to prevent/delay student fatique and to reload memory discs.

Continued checklist practice is seen as beneficial to students so each mission will include all checklists from Before Starting Engines to Shutdown. The student navigator can preflight his equipment while the student pilots perform the BITE check. Timed start sequence and other formation activities can be included in the profile for realism as far as practical.

Routes selected for the IFS should parallel established routes as closely as possible to ensure students master local procedures and radio calls to permit standard performance on evaluations. The missions should be repetitions of the standard route-drop-recovery cycle. Full-stop landings, while of limited value due to IFS simulation limitations, will be necessary in order to zeroize the simulator computer and set in Initial Conditions for the next profile.

The routes and profiles that follow will enable the student to transition easily to the aircraft after the second mission should weather considerations dictate.

With this arrangement, a minimum number of program discs are needed thus minimizing manpower (programmers) and equipment (discs) costs. The profiles include low approach and lead change training.

The first class used for validation should number at least half the present PFT of eight. Those students selected to participate in the Simulator Group should be handpicked on the basis of previous C-130 experience or strong performance in Phase I, so they will not be hurt by shortcomings in the initial profiles.

62nd TAS instructors should be selected on the following basis: 1. availability for IFS familiarization training, 2. availability for student-instructor continuity through the IFS and flying stages, and 3. minimum additional duty tasking. No advantage is presently seen in scheduling "hard" instructor or student crews. Flight Engineer duties may be performed by fully qualified FE's or spare IP's or IN's.

Validation

Qualitative and quantitative methods are available for validation of the program. A pool of evaluators should be designated who will give checkrides to students from both the Simulator and Control Groups. A questionnaire could be provided to these evaluators with considerably more detail than the present evaluation forms 4C to distinguish performance differences between the two groups.

The quantitative comparison would be based on an analysis of differences between hardcopy runs from the IFS. The last mission of the Simulator Group could be compared with a mission flown in the IFS by the Control Group. The same profile could be compared on the basis of such parameters as altitude control, percentage of route flown out of position, or drop position.

It may even be possible to complete the SKE formation checkride in the IFS at a later date. The advantages of the IFS in the SKE portion of training are seen as: 1. reduction of flying time (two to four missions deleted), 2. more realism in training in an instrument simulator when the weather is clear, 3. increased safety margin in flying the initial two orientation missions or all four SKE missions in a controlled environment.

Profiles

Day 1	Time:	2 hours
	Activities:	Normal Checklists Benit 6 Departure AA 29 route as #2 to Personnel airdrop SKE ILS straight-in full-stop
Day 2	Time:	4 hours
	Activities:	Normal Checklist Benit 6 Departure AA 29 route as #3 to Personnel airdrop SKE ILS straight-in full-stop Break Benit 6 Departure AA 27 route as #2 to Heavy Equipment airdrop SKE Procedure turn ILS full-stop
Day 3	Time:	4 hours
	Activities:	Benit 6 Departure AA 30 route #2 to Heavy Equipment airdrop SKE ILS straight-in full-stop Break Benit 6 Departure AA 30 route as lead to CDS airdrop SKE Procedure turn ILS Low-approach Benit 6 Departure and Lead Change AA 26 route as #3 to Personnel airdrop SKE ILS straight-in full-stop
Day 4	Time:	4 hours
	Activities:	Benit 6 Departure AA 30 route as #4 to Heavy Equipment airdrop SKE ILS straight-in full-stop Break Benit 6 Departure AA 30 route as #3 to CDS airdrop SKE Procedure turn ILS Low-approach Benit 6 Departure and Lead Change AA 26 route as #2 to Personnel airdrop SKE ILS straight-in full-stop

FY 1981 CLASS SCHEDULE

COURSE: PILOT, TACTICAL QUALIFICATION

CLASS #	REPORT DATE	START ACADEMICS	COMPLETE ACADEMICS	TNG DAYS	START SIMULATOR	COMPLETE SIMULATOR	TNG DAYS	START FLYING	COMPLETE FLYING	TNG DAYS
81-009	-	27 Apr 81	1 May 81	5	-	-	-	4 May 81	4 Jun 81	23
-010	-	12 May	18 May	5	-	-	-	19 May	19 Jun	23
-011	-	28 May	3 Jun	5	-	-	-	4 Jun	7 Jul	23
-012	-	12 Jun	18 Jun	5	-	-	-	19 Jun	22 Jul	23
-013	-	29 Jun	6 Jul	5	-	-	-	7 Jul	6 Aug	23
-014	-	15 Jul	21 Jul	5	-	-	-	22 Jul	21 Aug	23
-015	-	30 Jul	5 Aug	5	-	-	-	6 Aug	8 Sep	23
-016	-	14 Aug	20 Aug	5	-	-	-	21 Aug	23 Sep	23
-017	-	31 Aug	4 Sep	5	-	-	-	8 Sep	8 Oct	23
-018	-	16 Sep	22 Sep	5	-	-	-	23 Sep	26 Oct	23
-019	-	1 Oct	7 Oct	5	-	-	-	8 Oct	10 Nov	23
-020	-	19 Oct	23 OCt	5	-	-	-	26 Oct	27 Nov	23
-021	-	3 Nov	9 Nov	5	-	-	-	10 Nov	14 Dec	23
-022	-	19 Nov	25 Nov	5	-	-	-	27 Nov	12 Jan 82	23

COURSE: NAVIGATOR, MISSION QUALIFICATION

CLASS #	REPORT DATE	START ACADEMICS	COMPLETE ACADEMICS	TNG DAYS	START SIMULATOR	COMPLETE SIMULATOR	TNG DAYS	START FLYING	COMPLETE FLYING	TNG DAYS
81-010	-	6 May 81	18 May 81	9	-	-	-	19 May 81	17 Jun 81	21
-011	-	21 May	3 Jun	9	-	-	-	4 Jun	2 Jul	21
-012	-	8 Jun	18 Jun	9	-	-	-	19 Jun	20 Jul	21
-013	-	23 Jun	6 Jul	9	-	-	-	7 Jul	4 Aug	21
-014	-	9 Jul	21 Jul	9	-	-	-	22 Jul	19 Aug	21
-015	-	24 Jul	5 Aug	9	-	-	-	6 Aug	3 Sep	21
-016	-	10 Aug	20 Aug	9	-	-	-	21 Aug	21 Sep	21
-017	-	25 Aug	4 Sep	9	-	-	-	8 Sep	6 Oct	21
-018	-	10 Sep	22 Sep	9	-	-	-	23 Sep	22 Oct	21
-019	-	25 Sep	7 Oct	9	-	-	-	8 Oct	6 Nov	21
-020	-	13 Oct	23 Oct	9	-	-	-	26 Oct	24 Nov	21
-021	-	28 Oct	9 Nov	9	-	-	-	10 Nov	10 Dec	21

PILOT PHASE II ACADEMIC COURSE

SUBJECT	TIME	DAY 1	DAY 2	DAY 3	DAY 4	DAY 5	DAY 6
INTRODUCTION & ORIENTATION	0 + 50	0800-0850					
COMMAND AND CONTROL	0 + 50	0900-0950					
TACTICAL EMPLOYMENT	2 + 00	1000-1210					
CHART PREPARATION	2 + 30 6 + 10	1330-1620					
TEST ONE	0 + 50		0800-0850				
AIRCRAFT EQUIPMENT	0 + 55		0900-0955				
PERSONNEL AIRDROP	1 + 40		1005-1155				
EQUIPMENT AIRDROP	1 + 40		1300-1450				
CDS AIRDROP	0 + 50		1500-1550				
TRAINING BUNDLE AIRDROP	0 + 10 6 + 15		1600-1620				
TEST TWO	0 + 50			0800-0850			
MAXIMUM EFFORT OPERATIONS	4 + 00			0900-1440			
ENGINES RUNNING ON/OFFLOAD	0 + 30			1450-1520			
COMBAT OFFLOAD	0 + 30			1520-1550			
WINDMILL TAXI START	0 + 30			1600-1630			
THREE-ENGINE TAKEOFF	0 + 30 6 + 50			1630-1700			
TEST THREE	0 + 50				0800-0850		
VISUAL FORMATION	3 + 20				0900-13[illegible]		
VFR MISSION ORIENTATION	0 + 50 [5 + 00]				1400-1450		
AIRDROP CREW COORD TRN	4 + 00 9 + 00				1500-1900		
TEST FOUR	0 + 50					0800-0850	
STATION KEEPING EQUIPMENT	2 + 30 [4 + 20]					0900-1150	
AIRDROP CREW COORD TRN	8 + 00 11 + 20					1200-2000	
SKE FORMATION (taught)	4 + 20 [5 + 10]						0800-1400
TEST FIVE (twice)	0 + 50 10 + 20						1410-1500

A7-1

NAVIGATOR PHASE II ACADEMIC COURSE

DAY 1

0800-0900	INTRODUCTION AND OVERVIEW
0900-1000	MISSION PLANNING FACTORS
1000-1100	CHART CONSTRUCTION - SR 227
1100-1200	LUNCH
1200-1300	CHART CONSTRUCTION (CONTINUED)
1300-1500	FLIGHT PLAN - MAC FORM 348 (TRN MSN #1)

DAY 2

0800-0830	CARP COMPONENTS
0830-1030	CARP COMPUTATIONS
1030-1100	CARP PLOTTING
1100-1200	LUNCH
1200-1300	MISSION PLANNING AND BRIEFING
1300-1400	PREFLIGHT AND DEPARTURE
1400-1530	ENROUTE PROCEDURES TO SLOWDOWN

DAY 3

0800-0830	BASIC CARP REVIEW & RETEACH
0830-1000	ENROUTE PROCEDURES SLOWDOWN-DROP
1000-1100	GRID OVERLAY
1100-1200	LUNCH
1200-1230	WIND CIRCLE OVERLAY
1230-1330	CLOSE IN CARP TIMING TECHNIQUES
1330-1430	ESCAPE, ACCELERATION & RECOVERIES
1430-1500	FORMS COMPLETION

DAY 4

0800-0830	GRID & WIND CIRCLE REVIEW & RETEACH
0830-0900	HOW VARIABLES AFFECT THE CARP
0900-1030	VISUAL ROUTE & OBJECTIVE AREA STUDY
1030-1100	RADAR ROUTE & OBJECTIVE AREA STUDY
1100-1200	GROUP 1, TRNR MISN #1; GROUP 2, LUNCH
1230-1400	GROUP 2, TRNR MISN #1; GROUP 1, LUNCH
1400-1600	SPECIAL METHODS AND TACTICS

DAY 5

0800-0900	STATION KEEPING (SKE) EQUIPMENT
0900-1100	SKE FORMATION. PART 1 (LEAD)
1100-1200	LUNCH
1200-1330	SKE FLIGHT PLAN - - SR 230 (TM #2)
1330-1500	CARP & DZ PHOTO - - E-W HE (TM #2)
1500-A/R	CONTINUED CHART CONSTRUCTION

DAY 6

0800-1100	SKE FORMATION. PART 2 (WINGMAN)
1100-1200	LUNCH
1200-1330	TACTICAL EMERGENCY PROCEDURES
1330-A/R	TACTICAL QUESTIONNAIRE (COMPLETE PRIOR TO CLASS TIME)

DAY 7

0800-0930	GROUP 1, TRN MSN #2, GROUP 2, OFF
0930-1100	GROUP 2, TRN MSN #2, GROUP 1, OFF
1100-1200	LUNCH
1200-1500	TACTICAL OPEN & CLOSED BOOK EXAMS
1500-1600	EXAM REVIEW AND RETEACH: CRITIQUE ACADEMICS PHASE

SECTION IV

SIMULATOR TRAINING

PILOT VISUAL/SKE FORMATION QUALIFICATION

CRITERION OBJECTIVE: Given a simulator, appropriate publications, airdrop materials, and tactical routes, accomplish all tasks necessary to properly execute a tactical SKE formation airdrop mission. Accomplish all tasks and training requirements with reference to applicable publications and achieve proficiency levels specified for mission qualification pilots in CSD C-130PTV/S and LRAFB Form 0-91f.

TRAINING AIDS: C-130E simulator.

REFERENCE MATERIALS: T.O. 1C-130B-1, T.O. 1C-130B-1-1, T.O. 1C-130B-1CL-1, Approach charts, MACR 55-130, and Student Study Guides/Handouts.

GENERAL: Simulator training is designed to train you in both SKE formation procedures and in flying SKE formation position. Four simulator missions will be integrated with your flying missions after the completion of academics. Be sure to check the schedule at the simulator bays or at the squadron and understand which of the five mission profiles you are scheduled for each day. Ground training will be accomplished on days when no simulator or flying training is conducted.

1. Food, drink, and smoking are prohibited in the simulator. As a safety precaution, students must strap-in for all simulator missions.

2. Show times will be 0+45 prior to each mission or earlier at the instructor's discretion.

3. Bring your headset, helmet/oxygen mask, student study guide, aircraft and airdrop checklist, and MACR 55-130 with you to the simulator training.

4. For each mission, you will receive a serial lead briefing 30 minutes prior to your mission time. Pay particular attention to the weather and the sequence of events. Refer to your copy of the MAC Form 280 in this section of the study guide.

5. Fly the mission in accordance with the MAC Form 280 and the 314TAW Flimsy to include enroute navigation and an instrument recovery. Mission data not contained in the 314 TAW Flimsy can be found in this guide or will be provided by your instructor. Since the simulator responds very much like the aircraft, concentrate on flying the simulator and making the airdrop and do not be unduly concerned with precise navigation.

6. Following each lesson, your instructor will debrief you on the mission. Review and initial the grade folder for each lesson. If you had difficulty with a procedure, you can expect to see it again on a subsequent mission. The goal is to train you to the point where your performance meets or exceeds the standard for each mission. The standard for each maneuver is listed in your grade folder along with an explanation of the standards.

MISSION PROFILE 1

DEMONSTRATIONS AT LITTLE ROCK AFB AND ALL-AMERICAN DZ. DEMONSTRATION OF SKE TAKEOFF, BENIT DEPARTURE, ASSEMBLY, ACCELERATION, AND CLIMB TO 7000 FEET MSL. DEMONSTRATION OF SKE RUN-IN FROM IP THROUGH 15,000 POUND HEAVY EQUIPMENT AIRDROP, ESCAPE, AND ACCELERATION. DEMONSTRATION OF BRAVO SKE RECOVERY FROM BASE LEG THROUGH ILS APPROACH AND LANDING.

LITTLE ROCK AFB TO ALL-AMERICAN DZ. DEPART LITTLE ROCK AFB RUNWAY 25 VIA BENIT DEPARTURE TO AA29 ROUTE USING SKE FORMATION PROCEDURES AS NUMBER TWO TO ALL-AMERICAN DZ FOR A PERSONNEL AIRDROP, BRAVO STRAIGHT-IN ILS RECOVERY AT LITTLE ROCK AFB.

MISSION PROFILE 2

LITTLE ROCK AFB TO ARROWHEAD DZ. DEPART LITTLE ROCK AFB RUNWAY 25 VIA BENIT DEPARTURE TO AA90 ROUTE USING SKE FORMATION PROCEDURES AS NUMBER TWO TO ARROWHEAD DZ FOR A 16,000 POUND MASS CDS AIRDROP, STRAIGHT-IN VOR/DME RECOVERY AT FORT SMITH MUNI.

FORT SMITH MUNI TO ALL-AMERICAN DZ. DEPART FORT SMITH MUNI RUNWAY 07 TO AA91 ROUTE USING SKE FORMATION PROCEDURES AS NUMBER THREE TO ALL-AMERICAN DZ FOR A 32,000 POUND MASS CDS AIRDROP, BRAVO STRAIGHT-IN TACAN RECOVERY AT LITTLE ROCK AFB.

MISSION PROFILE 3

LITTLE ROCK AFB TO ALL-AMERICAN DZ. DEPART LITTLE ROCK AFB RUNWAY 25 VIA BENIT DEPARTURE TO AA29 ROUTE USING SKE FORMATION PROCEDURES AS NUMBER TWO TO ALL-AMERICAN DZ FOR A PERSONNEL AIRDROP, BRAVO STRAIGHT-IN ILS RECOVERY AT LITTLE ROCK AFB.

LITTLE ROCK AFB TO ALL-AMERICAN DZ. DEPART LITTLE ROCK AFB RUNWAY 25 VIA BENIT DEPARTURE TO AA30 ROUTE USING SKE FORMATION PROCEDURES AS LEAD TO ALL-AMERICAN DZ FOR A 15,000 POUND HEAVY EQUIPMENT AIRDROP, BRAVO PROCEDURE TURN ILS RECOVERY AT LITTLE ROCK AFB. A LOW APPROACH AND AIRBORNE RADAR APPROACH ARE OPTIONAL.

MISSION PROFILE 4

LITTLE ROCK AFB TO ALL-AMERICAN DZ. DEPART LITTLE ROCK AFB RUNWAY 25 VIA BENIT DEPARTURE TO AA29 ROUTE USING SKE FORMATION PROCEDURES AS NUMBER THREE TO ALL-AMERICAN DZ FOR A PERSONNEL AIRDROP, BRAVO STRAIGHT-IN ILS RECOVERY AT LITTLE ROCK AFB.

LITTLE ROCK AFB TO ALL-AMERICAN DZ. DEPART LITTLE ROCK AFB RUNWAY 25 VIA BENIT DEPARTURE TO AA30 ROUTE USING SKE FORMATION PROCEDURES AS ELEMENT LEAD TO ALL-AMERICAN DZ FOR A 15,000 POUND HEAVY EQUIPMENT AIRDROP, BRAVO STRAIGHT-IN LOCALIZER ONLY RECOVERY AT LITTLE ROCK AFB. A LOW APPROACH AND AIRBORNE RADAR APPROACH ARE OPTIONAL.

MISSION PROFILE 5

LITTLE ROCK AFB TO ALL-AMERICAN DZ. DEPART LITTLE ROCK AFB RUNWAY 25 VIA BENIT DEPARTURE TO AA29 ROUTE USING SKE FORMATION PROCEDURES AS NUMBER TWO TO ALL-AMERICAN DZ FOR A PERSONNEL AIRDROP, BRAVO STRAIGHT-IN ILS RECOVERY AT LITTLE ROCK AFB.

LITTLE ROCK AFB TO ALL-AMERICAN DZ. DEPART LITTLE ROCK AFB RUNWAY 25 VIA BENIT DEPARTURE TO AA30 ROUTE USING SKE FORMATION PROCEDURES AS NUMBER THREE TO ALL-AMERICAN DZ FOR A 15,000 POUND HEAVY EQUIPMENT AIRDROP, BRAVO STRAIGHT-IN LOCALIZER ONLY RECOVERY AT LITTLE ROCK AFB. A LOW APPROACH AND AIRBORNE RADAR APPROACH ARE OPTIONAL.

PILOT'S INFORMATION

DATE: 32 Mar 82

MISSION NUMBER	FORMATION CALL SIGN	AIRBORNE MISSION COMMANDER
22R9	JODY 01	BAERTL/FUHRMAN /DMC

AIRCRAFT COMMANDER	ACFT NO.	CALL SIGN	LOCATION	CHALK NO.	REMARKS
FUHRMAN	7777	JODY 69	Q-3	SLOT 15	FUEL 38M SATB 0 LOAD:20 Troopers/H.E.
YOU	1298	JODY 59	S-2	16	FUEL 38M SATB 0 LOAD:20 Troopers/H.E.
BAERTL	7858	JODY 34	A-3	17	FUEL 38M SATB 0 LOAD:20 Troopers/H.E.
BUTLER	0626	JODY 21	B-1	18	FUEL 38M SATB 0 LOAD:20 Troopers/H.E.
		JODY			FUEL____ SATB____ LOAD:
		JODY			FUEL____ SATB____ LOAD:
SPARE					
SPARE					

TIMING

ITEM	SORTIE NO. 1	SORTIE NO. 2	SORTIE NO.	SORTIE NO.
LOAD	IN PROGRESS			
FCI CHECK	Prior to T.O.			
STATION	0825			
ENGINE START	0830			
TAXI	0840			
TAKEOFF	0903	1118		
TIME OVER TARGET	1000	1200		
LATEST TO	5 MIN PRIOR TO FIRST INFLIGHT WARNING			

STATION KEEPING EQUIPMENT

MASTER	DEPUTY MASTER	FREQUENCY
YOU	BAERTL	B
FUHRMAN	YOU	A

IDENTIFICATION/FRIEND OR FOE

MODE I	MODE II	MODE III	MODE IV
A/R	OUT	1st & LAST	OUT

SALVO AREA (S)

AADZ - Personnel
LRF 273/7 - Heavy Equipment

EMERGENCY AIRFIELD (S)

LITTLE ROCK AFB
ADAMS FIELD

REMARKS

ESA - 4500'

TORQUE : Correspond to 932 TIT

MARSHALL at Taxiway 5

MAC FORM NOV 77 280 PREVIOUS EDITION IS OBSOLETE

FORMATION (Aircraft Commander / Call Suffix | Slot No.)

SECTION SORTIE NO. 1	SECTION SORTIE NO. 2	SECTION SORTIE NO.	SECTION SORTIE NO.
FUHRMAN J-69 | 15	BUTLER J-21 | 18		
BAERTL J-34 | 17	YOU J-59 | 16		
YOU J-59 | 16	FUHRMAN J-69 | 15		
BUTLER J-21 | 18	BAERTL J-34 | 17		
SKE AA29 Personnel | 1000	SKE AA30 H.E. | 1200		
TYPE RECOVERY St-in ILS F/S	TYPE RECOVERY St-in Loc only F/S	TYPE RECOVERY	TYPE RECOVERY

ALTITUDE / AIRSPEED				
ASSEMBLY	3000M/180			
ROUTE	7000M/210	7000M/210		
ASCENT	1000 FPM/ENROUTE A/S			
DESCENT	1000 FPM/ENROUTE A/S			
DROP	1405M/125	1505M/130		
RETURN	2000M/180	2000M/180		

COMMUNICATIONS

ITEM	CALL SIGN	UHF/FM	CALL SIGN	VHF/HF	REMARKS
TAXI	LRF GND	275.8(3)	JODY 01	143.8/142.2	
TAKEOFF	LRF TWR	348.4(1)	LRF TWR	126.2	
DEPARTURE	LRF DEP CON	385.6(15)	LRF DEP CON	118.1	
ENROUTE	JODY 01	342.4(7)	JODY 01	143.8/142.2	
	MEMPHIS CTR	286.6/348.7			
DROP ZONE CONTROL	AA DZ	342.4(7)	AA DZ	139.6/7460 ~~FM 46.75~~	
ENROUTE					
RECOVERY	LRF APP CON	385.6(15)	LRF APP CON	118.1	
COMMAND CENTER	LRF CP	349.4(11)			
~~FIGHTER~~ XXXXXXXXX METRO	LRF METRO	239.8(13)			
~~RESCUE~~ XXXXXXXXX BASE OPS	LRF DSP	372.2(12)			
EMERGENCY		243.0		121.5	
ATIS		271.3			

U.S. G.P.O. 1980-665-139/51

CHAPTER 1

GENERAL INFORMATION

A. COURSE TITLE: C-130EP02P3 - C-130E Pilot Visual/SKE Formation Qualification.

B. PURPOSE: To train and qualify a pilot for visual/SKE formation tactical missions as a copilot or aircraft commander candidate.

C. PREREQUISITES FOR ATTENDANCE: Qualified and current in the C-130E aircraft. Foreign students ECL 80AV. Flight physical and physiological training must be current for at least 60 days from start date.

D. COURSE SUMMARY DATA:

ACADEMIC SUBJECTS	APPROXIMATE HOURS EACH STUDENT ACADEMIC	TRAINER	INSTR/STUD RATIO CLASSROOM	ATD
INTRODUCTION AND ORIENTATION	1.0	-	1:class	-
COMMAND AND CONTROL	1.0	-	1:class	-
TACTICAL EMPLOYMENT	2.0	-	1:class	-
CHART PREPARATION	1.0	-	1:class	-
ROUTE/OBJECTIVE AREA STUDY	2.0	PTT/1.5	1:class	1:2
AIRCRAFT EQUIPMENT	1.0	-	1:class	-
MODES OF AERIAL DELIVERY	6.0	-	1:class	-
MAXIMUM EFFORT OPERATIONS	5.0	-	1:class	-
OFFLOAD METHODS	1.0	-	1:class	-
PROFICIENCY MANEUVERS	1.5	-	1:class	-
VISUAL FORMATION	5.0	-	1:class	-
SKE EQUIPMENT	3.0	-	1:class	-
SKE FORMATION	5.0	-	1:class	-
TESTING	5.0	-	1:class	-
TOTALS	39.5	1.5		

FLYING TRAINING	MISSION LENGTH	TIME EACH STUDENT FP/CP	MISSION SUPPORT	INSTR/STUD RATIO CLASSROOM	ATD
MISSION 1	5.0	2.5/2.5	5.0	-	1:2
MISSION 2	5.0	2.5/2.5	5.0	-	1:2
MISSION 3	5.0	2.5/2.5	7.0	-	1:2
MISSION 4	5.0	2.5/2.5	5.0	-	1:2
MISSION 5	5.0	2.5/2.5	5.0	-	1:2
MISSION 6	5.0	2.5/2.5	7.0	-	1:2
MISSION 7	5.0	2.5/2.5	5.0	-	1:2
MISSION 8	5.0	2.5/2.5	5.0	-	1:2
MISSION 9 (EVAL)	5.0	2.5/2.5	7.0	-	1:2
GROUND TRAINING DAY #1	-	4.0	-	1:2	-
GROUND TRAINING DAY #2	-	4.0	-	1:2	-
GROUND TRAINING DAY #3	-	4.0	-	1:2	-
GROUND TRAINING DAY #4	-	4.0	-	1:2	-
GROUND TRAINING DAY #5	-	4.0	-	1:2	-
GROUND TRAINING DAY #6	-	4.0	-	1:2	-
TOTALS	45.0	69.0	51.0		

REMARKS:	HOURS/STUDENT
IN PROCESSING	N/A
OUT PROCESSING	2.0
SAFETY BRIEFING	1.0
TOTAL	3.0

E. MASTER TRAINING SCHEDULE:

```
TRAINING                      1                   2
  DAYS      0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8

IN PROCESS    X
ACADEMIC TNG    X X X X X   X
PART-TASK TNG           X
FLYING TNG                X   X X   X X   X X   X X   X X   X X X     X*
GROUND TNG                        X     X     X     X     X         X
```

* As needed for crew rest, night mission scheduling, maintenance/weather aborts, etc. Flying training and evaluation consist of nine flights.

F. STATUS UPON GRADUATION: A Certificate of Training, Air Force Form 1256, and a Certificate of Aircrew Qualification, Air Force Form 8, are awarded upon satisfactory completion of course objectives. Graduates are qualified to perform duties as aircraft commanders and copilots during C-130 tactical missions pending certification action by the gaining organization.

CHAPTER 2

TRAINING REQUIREMENTS

TASK NO	TASKS/SUBTASKS	ACAD	PTT	AC/SPT	T	TOTAL
00	INTRODUCTION	0.5	-	- / -	-	0.5
01	COMPREHEND MISSION ORIENTATION	0.5	-	- / -	2.0	2.5
02	ANALYZE COMMAND AND CONTROL FUNCTIONS	1.0	-	- / -	-	1.0
03	IDENTIFY TACTICAL EMPLOYMENT FEATURES	2.0	-	- / -	2.0	4.0
04	ACCOMPLISH CHART PREPARATION	1.0	-	- / -	-	1.0
05	ACCOMPLISH ROUTE/OBJECTIVE AREA STUDY	2.0	1.5	- / -	-	3.5
06	LOCATE AIRCRAFT EQUIPMENT	1.0	-	0.5/ -	4.0	5.5
07	DISCUSS MODES OF AERIAL DELIVERY	6.0	-	- / -	8.0	14.0
08	PERFORM MAXIMUM EFFORT OPERATIONS	5.0	-	7.0/ 6.0	-	18.0
09	DESCRIBE OFFLOAD METHODS	1.0	-	1.0/ -	-	2.0
10	ACCOMPLISH MISSION PLANNING	-	-	- /33.0	-	33.0
11	PERFORM AIRCRAFT PROFICIENCY MANEUVERS	1.5	-	2.5/ -	-	4.0
12	PERFORM VISUAL FORMATION	5.0	-	19.0/ 6.0	-	30.0
13	ANALYZE STATIONKEEPING EQUIPMENT	3.0	-	0.5/ -	4.0	7.5
14	PERFORM SKE FORMATION	5.0	-	14.5/ 6.0	-	25.5
15	TESTING/SUPPORT	5.0	-	- /10.0	4.0	19.0
	TOTALS	39.5	1.5	45.0/61.0	24.0	171.0

NOTE:

1. IP-in-the-seat policy: In accordance with MAC and the Commander, 314TAW, the following policy will apply to units of the 34TATG. 34TATG units conducting formal Phase II training must have an IAC occupy one of the pilot's seats during the first four flights of the syllabus (to include the first night flight). In addition, an IAC will occupy one of the pilot's seats during flight in IMC, all takeoffs and landings, actual personnel airdrops, formation recoveries, and night formation rejoins during Phase II training.

2. In accordance with 34TATG Commander directives, day low-level (modified contour) missions will be flown at 500 feet AGL. Qualified instructor pilots may demonstrate one, day, low-level route at 300 feet AGL.

SUMMARY OF CHANGES: This revision complies with the standard format specified in MAC SUP 1 to AFR 50-8. The subjects and times in academic training have been restructured. The training requirements in Chapter 2 have been changed to show greater detail with the inclusion of ground training time. Students accomplish testing in academics and no longer take 314TAW tactical tests during the flying phase.

STUDENT PERFORMANCE DATA

Simulator Group, Pilots

Name	Gaining Base	Crew Position	Qual Level	Flying Missions	Fly(Sim) Time	Days In Training
Class 81-012						
Capt S. G. Wenska	Yokota	AC	Q-1	7+	33.0(16)	21
Capt T. E. Walsh, Jr.	Yokota	CP	Q-1	7+	33.0(16)	21
Maj G. A. Gray, III	Pope	AC	Q-1	7+	30.5(16)	19
2Lt P. D. Ware	Richards-Gebaur	CP	Q-1	7+	30.5(16)	22
Capt D. L. Perry	Yokota	AC	Q-1	7+	31.0(12)	19
1Lt C. F. Plash	McChord	CP	Q-1	8+	36.2(12)	21
Capt A. P. Erickson	Little Rock	AC	Q-1	7+	33.1(16)	21
2Lt J. A. Singletary	Little Rock	CP	Q-1	7+	33.2(16)	21
Class 81-014						
Capt W. R. Benson	Clark	AC	Q-1	7+	30.7(16)	21
2Lt J. P. Widmayer	Little Rock	CP	Q-1	7+	30.7(16)	21
Capt R. E. Bran[illegible]s	Youngstown	AC	Q-2	8+CA+2	37.0(16)	22
2Lt B. D. Smith	Rhein-Main	CP	Q-1	8+	37.0(16)	22
Capt G. C. Kennedy	Dyess	AC	Q-1	8+	33.0(12)	22
Capt D. S. Eppley	Dyess	AC	Q-1	8+	32.9(12)	22
Capt D. P. Goolsby	Dyess	AC	Q-2	7+CA+	31.3(12)	20
Capt J. S. Maple	Dyess	AC	Q-2	7+2CA+	31.3(12)	21
Class 81-016						
Lt Col J. J. Woodruff	Dyess	AC	Q-1	7+	29.7(17)	21
Capt C. F. Riordan	Elmendorf	CP	Q-1	7+	29.7(17)	21
Maj G. C. Vycital	Dyess	AC	Q-1	7+	33.3(16)	19
2Lt T. E. [illegible]uschalek	Dyess	CP	Q-1	7+	33.3(16)	19
Maj C. H. Wittrock	Clark	AC	Q-1	6+	25.9(16)	20
2Lt T. M. Paczolt	Pope	CP	Q-1	6+	25.9(16)	20
Maj R. T. Kadish	Rhein-Main	AC	Q-1	7+	30.6(16)	20
Capt D. P. Lefler	Little Rock	CP	Q-1	6+	26.7(16)	20
Class 81-018						
Capt L. H. Mattox	McChord	AC	Q-1	7+	31.9(12)	20
2Lt R. McCasland	McChord	CP	Q-1	7+	30.5(12)	20
Capt J. R. Frazier	Elmendorf	AC	Q-1	8+	37.7(16)	20
2Lt R. M. Jiricek	Pope	CP	Q-1	8+	37.7(16)	20
Capt J. J. Knesek	Little Rock	AC	Q-1	8+	34.2(16)	23
2Lt R. A. Wilt	Dyess	CP	Q-1	7+	30.2(16)	23

NOTE: Control Group not listed due to large number.

STUDENT PERFORMANCE DATA

Control Group, Navigator

Class 81-011

Name	Gaining Base	Qual Level	Flying Missions	Fly Time	Days In Training
2Lt Maresca	Clark	Q-1	7+	26.1	13
2Lt Mohr	Dyess	Q-1	11+	45.1	19
2Lt Johnson	Yokota	Q-1	9+	28.5	16
2Lt Lewis	Dyess	Q-2	9+	31.7	18
Class 81-013					
Maj Williams	Yokota	Q-1	6+	23.1	20
2Lt Dietrich	Little Rock	Q-1	9+	35.4	21
2Lt Nokeley	Dyess	Q-1	10+	38.3	24
2Lt Webster	Dyess	Q-1	9+	29.6	24
2Lt McClain	Pope	Q-1	RECORDS LOST		15
2Lt Preas	Dyess	Q-1/2	RECORDS LOST		15
Class 81-015					
Capt Evans	Little Rock	Q-1/2	7+	27.5	17
1Lt Corrigan	Yokota	Q-1/2	8+	33.6	17
2Lt Horan	Pope	Q-3	9+	33.7	23
1Lt Hollenbeck	Clark	Q-3	8+	36.0	19
Class 81-017					
2Lt Clever	Dyess	Q-1	8+	28.8	21
2Lt Savala	Dyess	Q-1	8+	30.9	19
2Lt Kirk	Pope	Q-1	8+	29.0	20
Capt Whiddon	Dyess	Q-1	8+	29.0	15
Capt Ross	Rhein-Main	Q-1	8+	31.3	17
Capt Kabel	Little Rock	Q-1	RECORDS LOST		12

STUDENT PERFORMANCE DATA

Simulator Group, Navigator

Class 81-012

Name	Gaining Base	Qual Level	Flying Missions	Fly Time	Days In Training
2Lt Puyear	Pope	Q-1	10+	37.4	22
Maj Monaghan	Little Rock	Q-1	7+	25.4	19
2Lt Easler	Dyess	Q-1	7+	28.2	19
2Lt Webb	Yokota	Q-1	RECORDS LOST		22
Class 81-014					
Capt McNamara	Little Rock	Q-2	6+	23.5	29
2Lt Bonds	Pope	Q-1	8+	31.9	22
2Lt Duncan	Dyess	Q-1	6+	25.1	25
Maj Lynd	Rhein-Main	Q-3	5+	15.3	21
Class 81-016					
Lt Col Jones	Clark	Q-1	7+	24.9	19
Maj Gibson	Dyess	Q-1	8+	33.8	24
Maj Wittle	Rhein-Main	Q-1	7+	26.3	20
2Lt Herpst	Yokota	Q-3	8+	34.3	24
Class 81-018					
Lt Col Berg	Dyess	Q-1	11+	35.4	24
2Lt O'Donnell	Dyess	Q-1	8+	31.0	24
2Lt Lee	Dyess	Q-3	8+	29.2	34

STUDENT EXPERIENCE LEVEL
(TEST GROUP)

	Pilots		Copilots		Navigators	
	Total Time	C-130 Time	Total Time	C-130 Time	Total Time	C-130 Time
Class 81-012						
	1900	1700	1200	30	140	40
	3100	2850	300	50	2700	1200
	1860	1640	250	45	140	40
	2100	1750	300	70	140	40
Total	8960	7940	2050	195	3120	1320
Ave	2240	1985	513	49	780	330
Class 81-014						
	2500	1500	250	25		
	1600	1400	175	31		
	1550	1350			140	40
	1575	1365			140	40
	1700	1500			5100	2900
	1600	1400			140	40
Total	10525	8515	425	56	5520	3021
Ave	1754	1419	213	28	1380	755
Class 81-016						
	2400	1800	1800	40	2700	2500
	2100	1900	275	45	6400	800
	2650	1400	200	50	140	40
	2000	1700	200	35	3700	1800
Total	9150	6800	2475	170	12940	5140
Ave	2288	1700	619	43	3235	1285
Class 81-018						
	1775	1575	260	40	140	40
	3000	1500	240	40	140	40
	2600	1400	250	40	7000	200
Total	7375	4475	750	120	7280	280
Ave	2458	1492	250	40	2426	93
Total	36010	27730	5700	541	28860	9761
Ave	2118	1631	438	42	1924	650

CRITIQUE OF MISSION QUALIFICATION TRAINING (Simulator Phase) PILOT

INSTRUCTIONS:
This critique should be completed at the end of the simulator phase of training. Use the rating scale:

(1) = UNSATISFACTORY
(2) = POOR
(3) = SATISFACTORY
(4) = EXCELLENT
(5) = OUTSTANDING

Leave blank those items which do not apply. Comments are encouraged for all items; required for items rated UNSATISFACTORY or OUTSTANDING. This critique is for validation of new courseware and should be returned to 34TATG/TTG (Course Development). *Course content will be evaluated in greater detail in a mailout questionnaire between three and six months after graduation.

NAME (Optional) ____________ CLASS # ____________ DATE ____________

RANK ____________ CREW POSITION AC CP N

TOTAL FLYING TIME ____________ C-130 TIME ____________

		COMMENTS: PERCENTAGES				
A. Instrument Flight Simulator						
1. Environment	(1) (2) (3) ● (5)	0	3	10	55	32
2. Realism	(1) (2) (3) ● (5)	0	0	24	69	7
3. Pace of Instruction	(1) (2) (3) ● (5)	0	0	17	59	24
4. Scheduling	(1) (2) ● (4) (5)	3	3	45	38	11
5. Ground Training	(1) (2) (3) ● (5)	0	0	34	48	18
6. Instructor Performance	(1) (2) (3) (4) ●	0	0	7	41	52
7. Mission Profiles	(1) (2) (3) ● (5)	0	0	31	38	31
8. Progress Check	(1) (2) (3) (4) (5)	0	0	0	0	0
B. Training Materials						
1. Publications	(1) (2) (3) ● (5)	0	0	31	52	17
2. Study Guides/Handouts	(1) (2) (3) ● (5)	0	3	24	48	25
3. Projected Aids	(1) (2) (3) ● (5)	0	0	34	59	7
4. Briefings	(1) (2) (3) ● (5)	0	0	31	59	10
C. Course Design						
1. Content*	(1) (2) (3) ● (5)	0	0	28	52	20
2. Logical Sequence	(1) (2) (3) ● (5)	0	0	21	55	24
3. Objectives Covered	(1) (2) (3) ● (5)	0	0	17	62	21

LITTLE ROCK AFB FORM MAY 78 12

CRITIQUE OF MISSION QUALIFICATION TRAINING (Simulator Phase) NAVIGATORS

INSTRUCTIONS:
This critique should be completed at the end of the simulator phase of training. Use the rating scale:

(1) = UNSATISFACTORY
(2) = POOR
(3) = SATISFACTORY
(4) = EXCELLENT
(5) = OUTSTANDING

Leave blank those items which do not apply. Comments are encouraged for all items; required for items rated UNSATISFACTORY or OUTSTANDING. This critique is for validation of new courseware and should be returned to 34TATG/TTG (Course Development). *Course content will be evaluated in greater detail in a mailout questionnaire between three and six months after graduation.

NAME (Optional) ________________ CLASS # ____________ DATE ____________

RANK ______________ CREW POSITION AC CP (N)

TOTAL FLYING TIME ______________ C-130 TIME ______________

		COMMENTS:	PERCENTAGES			
A. Instrument Flight Simulator						
1. Environment	(1) (2) ● ● (5)	0	7	40	40	13
2. Realism	(1) (2) ● (4) (5)	0	0	53	40	7
3. Pace of Instruction	(1) (2) ● (4) (5)	0	0	47	33	20
4. Scheduling	(1) (2) ● (4) (5)	0	27	60	7	6
5. Ground Training	(1) (2) ● (4) (5)	0	0	67	20	13
6. Instructor Performance	(1) (2) (3) ● (5)	0	0	33	40	27
7. Mission Profiles	(1) (2) ● (4) (5)	0	0	53	40	7
8. Progress Check	(1) (2) (3) (4) (5)	0	0	0	0	0
B. Training Materials						
1. Publications	(1) (2) ● (4) (5)	7	0	53	40	0
2. Study Guides/Handouts	(1) (2) ● (4) (5)	6	7	47	33	7
3. Projected Aids	(1) (2) ● (4) (5)	0	7	53	33	7
4. Briefings	(1) (2) ● (4) (5)	0	0	60	33	7
C. Course Design						
1. Content*	(1) (2) ● ● (5)	0	0	47	47	6
2. Logical Sequence	(1) (2) (3) ● (5)	0	6	40	47	7
3. Objectives Covered	(1) (2) ● (4) (5)	0	0	47	33	20

LITTLE ROCK AFB FORM MAY 78 12

CRITIQUE OF MISSION QUALIFICATION TRAINING (Simulator Phase) OVERALL

INSTRUCTIONS:

This critique should be completed at the end of the simulator phase of training. Use the rating scale:

(1) = UNSATISFACTORY
(2) = POOR
(3) = SATISFACTORY
(4) = EXCELLENT
(5) = OUTSTANDING

Leave blank those items which do not apply. Comments are encouraged for all items; required for items rated UNSATISFACTORY or OUTSTANDING. This critique is for validation of new courseware and should be returned to 34TATG/TTG (Course Development). *Course content will be evaluated in greater detail in a mailout questionnaire between three and six months after graduation.

NAME (Optional) ______________ CLASS # __________ DATE __________

RANK ______________ CREW POSITION (AC) (CP) (N)

TOTAL FLYING TIME ______________ C-130 TIME ______________

		COMMENTS:	PERCENTAGES				
A. Instrument Flight Simulator							
1. Environment	(1) (2) (3) ● (5)		0	5	20	50	25
2. Realism	(1) (2) (3) ● (5)		0	0	34	59	7
3. Pace of Instruction	(1) (2) (3) ● (5)		0	0	27	50	23
4. Scheduling	(1) (2) ● (4) (5)		2	11	50	27	10
5. Ground Training	(1) (2) ● (4) (5)		0	0	45	39	16
6. Instructor Performance	(1) (2) (3) ● (5)		0	0	16	41	43
7. Mission Profiles	(1) (2) ● ● (5)		0	0	39	39	22
8. Progress Check	(1) (2) (3) (4) (5)		0	0	0	0	0
B. Training Materials							
1. Publications	(1) (2) (3) ● (5)		2	0	39	48	11
2. Study Guides/Handouts	(1) (2) (3) ● (5)		2	5	32	43	18
3. Projected Aids	(1) (2) (3) ● (5)		0	2	41	50	7
4. Briefings	(1) (2) (3) ● (5)		0	0	41	50	9
C. Course Design							
1. Content*	(1) (2) (3) ● (5)		0	0	34	50	16
2. Logical Sequence	(1) (2) (3) ● (5)		0	2	27	52	19
3. Objectives Covered	(1) (2) (3) ● (5)		0	0	27	52	21

LITTLE ROCK AFB FORM MAY 78 12

CRITIQUE OF MISSION QUALIFICATION TRAINING (Flying Phase) PILOT

INSTRUCTIONS:
This critique should be completed at the end of the flying phase of training. Use the rating scale:

(1) = UNSATISFACTORY
(2) = POOR
(3) = SATISFACTORY
(4) = EXCELLENT
(5) = OUTSTANDING

Leave blank those items which do not apply. Comments are encouraged for all items; required for items rated UNSATISFACTORY or OUTSTANDING. This critique is for validation of new courseware and should be returned to 34TATG/TTG (Course Development). *Course content will be evaluated in greater detail in a mailout questionnaire between three and six months after graduation.

NAME (Optional) ______________ CLASS # ____________ DATE ____________

RANK ______________ CREW POSITION AC CP N

TOTAL FLYING TIME ______________ C-130 TIME ______________

		COMMENTS: PERCENTAGES				
A. Flying Training						
1. Pace of instruction	(1) (2) (3) ● (5)	0	0	36	44	20
2. Scheduling	(1) (2) ● (4) (5)	0	0	72	16	12
3. Ground Training	(1) (2) (3) ● (5)	0	0	36	48	16
4. Instructor Performance	(1) (2) (3) ● (5)	0	0	0	56	44
5. Mission Profiles	(1) (2) ● (4) (5)	0	4	44	36	16
6. Effective Transition to Aircraft	(1) (2) (3) ● (5)	0	0	24	40	36
7. Effective Preparation for Flying Missions	(1) (2) (3) ● (5)	0	0	28	40	32
B. Training Materials						
1. Publications	(1) (2) (3) ● (5)	0	0	36	48	16
2. Study Guides/Handouts	(1) (2) (3) ● (5)	0	0	12	60	28
3. Projected Aids	(1) (2) ● (4) (5)	0	0	48	40	12
4. Briefings	(1) (2) (3) ● (5)	0	0	36	48	16
C. Course Design						
1. Content*	(1) (2) (3) ● (5)	0	0	28	48	24
2. Logical Sequence	(1) (2) (3) ● (5)	0	4	24	48	24
3. Objectives Covered	(1) (2) (3) ● (5)	0	0	20	64	16

LITTLE ROCK AFB FORM MAY 78 12

CRITIQUE OF MISSION QUALIFICATION TRAINING (Flying Phase) NAVIGATOR

INSTRUCTIONS

This critique should be completed at the end of the flying phase of training. Use the rating scale:

(1) = UNSATISFACTORY
(2) = POOR
(3) = SATISFACTORY
(4) = EXCELLENT
(5) = OUTSTANDING

Leave blank those items which do not apply. Comments are encouraged for all items; required for items rated UNSATISFACTORY or OUTSTANDING. This critique is for validation of new courseware and should be returned to 34TATG/TTG (Course Development). *Course content will be evaluated in greater detail in a mailout questionnaire between three and six months after graduation.

NAME (Optional) ____________ CLASS # ____________ DATE ____________

RANK ____________ CREW POSITION AC CP N

TOTAL FLYING TIME ____________ C-130 TIME ____________

		COMMENTS:	PERCENTAGES				
A. Flying Training							
1. Pace of instruction	(1) (2) ● (4) (5)		0	0	75	0	25
2. Scheduling	(1) (2) ● (4) (5)		0	0	75	0	25
3. Ground Training	(1) (2) ● (4) (5)		0	0	75	25	0
4. Instructor Performance	(1) (2) (3) ● (5)		0	0	25	50	25
5. Mission Profiles	(1) (2) ● (4) (5)		0	0	75	25	0
6. Effective Transition to Aircraft	(1) (2) (3) ● (5)		0	0	25	50	25
7. Effective Preparation for Flying Missions	(1) (2) ● (4) (5)		0	0	50	25	25
B. Training Materials							
1. Publications	(1) (2) ● (4) (5)		0	0	75	25	0
2. Study Guides/Handouts	(1) (2) ● ● (5)		0	0	50	50	0
3. Projected Aids	(1) (2) ● (4) (5)		0	0	75	25	0
4. Briefings	(1) (2) ● (4) (5)		0	0	100	0	0
C. Course Design							
1. Content*	(1) (2) ● (4) (5)		0	0	75	25	0
2. Logical Sequence	(1) (2) ● ● (5)		0	0	50	50	0
3. Objectives Covered	(1) (2) ● ● (5)		0	0	50	50	0

LITTLE ROCK AFB FORM MAY 78 12

CRITIQUE OF MISSION QUALIFICATION TRAINING (Flying Phase) OVERALL

INSTRUCTIONS:
This critique should be completed at the end of the flying phase of training. Use the rating scale:

(1) = UNSATISFACTORY
(2) = POOR
(3) = SATISFACTORY
(4) = EXCELLENT
(5) = OUTSTANDING

Leave blank those items which do not apply. Comments are encouraged for all items; required for items rated UNSATISFACTORY or OUTSTANDING. This critique is for validation of new courseware and should be returned to 34TATG/TTG (Course Development). *Course content will be evaluated in greater detail in a mailout questionnaire between three and six months after graduation.

NAME (Optional) ______________ CLASS # ____________ DATE ____________

RANK ______________ CREW POSITION AC CP N

TOTAL FLYING TIME ______________ C-130 TIME ______________

	Rating	COMMENTS:		PERCENTAGES		
A. Flying Training						
1. Pace of instruction	(1) (2) ● (4) (5)	0	0	41	38	21
2. Scheduling	(1) (2) ● (4) (5)	0	0	72	14	14
3. Ground Training	(1) (2) (3) ● (5)	0	0	41	45	14
4. Instructor Performance	(1) (2) (3) ● (5)	0	0	3	55	42
5. Mission Profiles	(1) (2) ● (4) (5)	0	3	48	34	15
6. Effective Transition to Aircraft	(1) (2) (3) ● (5)	0	0	24	42	34
7. Effective Preparation for Flying Missions	(1) (2) (3) ● (5)	0	0	31	38	31
B. Training Materials						
1. Publications	(1) (2) (3) ● (5)	0	0	42	45	13
2. Study Guides/Handouts	(1) (2) (3) ● (5)	0	0	17	59	24
3. Projected Aids	(1) (2) ● (4) (5)	0	0	52	38	10
4. Briefings	(1) (2) ● (4) (5)	0	0	45	42	13
C. Course Design						
1. Content*	(1) (2) (3) ● (5)	0	0	34	45	21
2. Logical Sequence	(1) (2) (3) ● (5)	0	3	28	48	21
3. Objectives Covered	(1) (2) (3) ● (5)	0	0	24	62	14

LITTLE ROCK AFB FORM MAY 78 12

Student Comments

(Source: Student Critique Forms)

Class 81-012

Simulator Phase

IFS has no provision for "prop wash" effect.
Computer generated lead flies too consistently well. (fixed)
Simulator program beneficial. (3)[1]
0400 mission start excessively early. (3)
Delete or shorten mission briefing. (2)
Include more SKE malfunctions in profiles. (fixed)
Request routes in lead position. (fixed)
Integrate IFS and flight missions. (2)
Incorporate airborne radar approaches in profiles. (fixed)
Include loss of SKE in weather in profiles. (fixed)
Include more information in study guide for CARP. (2) (fixed)
Consider proficiency advancement after 3 missions. (2)
Complete simulator training in one block of missions.

Flying Phase

Increase frequency of flight missions. (4)
Test group and control group profiles conflict. (fixed)
IFS has no provision for "prop wash" effect.
Simulator training beneficial. (3)
Integrate IFS and flight missions.

[1](x) Numbers in parenthesis refer to the number of times a comment was made.

Class 81-014

Simulator Phase

Increase emphasis on PPI interpretation.
No projector available. (fixed)
Pace of instruction was slow.
Too much TOLD information.
Excessive reduction in flying time for copilots.
Request more routes in lead position. (2)[1] (fixed)
Fort Smith profile inadequately prepared.
IFS is more beneficial to pilots than navigators.
Pace of instruction is good.
Mission briefings are good.
0400 mission start excessively early.

Flying Phase

Aircraft commander students should not be crewed together.
Revise flying mission profiles.
Simulator program beneficial.

[1](x) Numbers in parenthesis refer to the number of times a comment was made.

Student Comments

(Source: Student Critique Forms)

Class 81-016

Simulator Phase

SKE DZ run-in unrealistic with IFS in lead position.
More coordination required between simulator and flight scheduling.
Include more SKE malfunctions in profiles. (fixed)
Delete or shorten mission briefings.
Revise profiles to include more wing and less lead position.
IFS elevator control feels overly sensitive.
Simulator program beneficial. (2)[1]
Conclude simulator block with progress check.
Integrate IFS and flight missions.
Include routes and approach plates in student study guide. (fixed)
Include more pilot techniques in student study guide.
Increase duration of SKE lead route.
Reduce number of IFS missions for navigators to 3.
0400 mission start excessively early.

Flying Phase

Simulator program beneficial. (2)
0400 mission start time excessively early.
SKE routes pointless with IFS in lead position. (2)
Degradation of performance of computer generated lead enhances training.
Include more pilot techniques in student study guide.

[1](x) Numbers in parenthesis refer to the number of times a comment was made.

Class 81-018

Simulator Phase

Auto message function unrealistic. (2)[1]
Variety of formation positions beneficial to training.
Simulator program beneficial. (3)
Students should prepare mission briefing.
IFS maintenance detracted from training. (5)
0400 mission start excessively early. (2)

Flying Phase

Decrease number of flying missions. (5)
Simulator program beneficial. (2)
IFS maintenance detracted from training.
Variety of formation positions beneficial to training.

[1](x) Numbers in parenthesis refer to the number of times a comment was made.

Unresolved Comment Summary

Students in Simulator Phase

IFS has no provision for "prop wash" effect.
Simulator program beneficial. (12)[1]
0400 mission start excessively early. (7)
Delete or shorten mission briefing. (3)
Include airdrop malfunctions in profiles.
Integrate IFS and flight missions. (3)
Consider proficiency advancement after 3 missions. (2)
Complete simulator training in one block of missions.
Pace of instruction was slow.
Too much TOLD information.
Excessive reduction in flying time for copilots.
Request more time in #3 formation position.
Provide visual cues for TO and assembly.
Fort Smith profile inadequately prepared.
IFS more beneficial to pilots than navigators.
Pace of instruction is good.
Mission briefings are good. (2)
SKE DZ run-in unrealistic with IFS in lead position.
More coordination required between simulator and flight scheduling.
Revise profiles to include more wing and less lead position.
IFS elevator control feels overly sensitive.
Conclude simulator block with progress check.
Include more pilot techniques in student study guide.
Increase duration of SKE lead route.

[1](x) Numbers.

Students in Flying Phase

Increase frequency of flight missions. (4)
IFS has no provision for "prop wash" effect.
Simulator training beneficial. (8)
Integrate IFS and flight missions.
Aircraft commander students should not be crewed together.
Revise flying mission profiles.
0400 mission start times excessively early.
SKE routes pointless with IFS in lead position. (2)
Degradation of performance of computer generated lead enhances training.
Include more pilot techniques in student study guide.
Decrease number of flying missions. (5)
IFS maintenance detracted from training.
Variety of formation positions beneficial to training.

PILOT AVERAGES

(BY CLASS)

Class No.	No. Of Students	Average Flying Hours	Average Diff Hours	Average No. Of Sorties	Average Diff# Sorties	[Days In Fly Trng] HI	AVE	LO	Days in Trng Diff
81-011C	18	36.05		8.1		21	19.3	16	
81-012T	8	32.56	-4.02	7.1	-1.4	22	20.6	19	-0.5
C	8	36.58		8.5		23	21.1	19	
81-013C	15	36.71		8.6		23	20.2	15	
81-014T	8	32.98	-6.36	7.5	-1.4	22	21.4	20	+1.1
C	9	39.34		8.9		24	20.3	17	
81-015C	13	42.29		9.5		22	20.5	18	
81-016T	8	29.38	-8.90	6.6	-2.5	21	20.0	19	+1.4
C	7	38.28		9.1		21	18.6	15	
81-017C	14	38.55		8.7		22	20.1	16	
81-018T	6	33.70	-4.39	7.8	-1.5	23	21.0	20	-0.3
C	12	38.09		9.3		26	21.3	18	
81-019C	14	37.42		8.7		26	21.4	19	

T = Test

C = Control

Checkride Discrepancies for Pilots
(Classes 81-011 thru 019, Airdrop Only)

CONTROL GROUP

Class No.	Crew Pos.	Qual Level	Form 4C Subarea	Description
11	AC	1/2	4	Use of checklist.
11	CP	1/2	4	Use of checklist.
11	AC	1/2	36B	Radar Altimeter setting on prec. app.
11	CP	1/2	9	Radio communications procedures.
			101C	No-drop acknowledgement.
11	AC	1/2	98B	Overturned on SKE enroute turns.
			103B	20kts below approach speed on SKE rec.
11	CP	1/2	98B	Allowed pilot to overturn during SKE.
12	CP	2	7	Crew coordination.
13	CP	1/2	10	Overdue oxygen mask inspection.
13	AC	2	102	Called for flaps "up" on escape.
13	CP	1/2	102	Gave pilot flaps "up" on escape.
14	AC	1/2	98B	Called for SKE crosstrack reset prior to IP.
14	CP	1/2	98B	Reset SKE crosstrack prior to IP.
15	CP	1/2	[illegible]	Late selecting SKE on departure.
			103B	Did not advise pilot he was long on SKE pro-turn recovery.
15	AC	3	103B	3000' long on SKE recovery.
15	CP	1/2	101C	Slow to turn on green light.
16	AC	3	101B	Out of position for drop.
			101C	Dropped without one minute warning.
			102	2000' long on escape.
16	CP	3	101C	Dropped without one minute warning.
			103A	Incomplete checklist on recovery.
16	AC	1/2	102	Maintained 140kts from red light to escape.
17	AC	2	7	Did not backup pilot on PPI in turns.
			97B	Overran on SKE departure.
			98B	Slow to correct altitude deviations.
17	CP	2	7	Did not backup pilot on PPI in turns.
			97B	Overran on SKE departure.

Checkride Discrepancies for Pilots
(Classes 81-011 thru 019, Airdrop Only)

CONTROL GROUP (CONT)

Class No.	Crew Pos.	Qual Level	Form 4C Subarea	Description
			98B	Slow to correct altitude deviations.
17	AC	1/2	94A	Incorrect terminology for FCI signals.
				Knowledge of H.E. no-drop procedures inside one minute warning.
17	CP	1/2	94A	Incorrect terminology for FCI signals.
				Knowledge of H.E. no-drop procedures inside one minute warning.
18	CP	1/2	103B	Did not switch to "normal" on SKE rec.
18	CP	1/2	103B	Went long on SKE recovery.
18	AC	1/2	103B	Went long on SKE recovery.
18	AC	1/2	102	Delayed Vis escape past red light time.
18	CP	3	98B	Tried to fly SKE without "SKE" selected.
			94B	Slow to update SKE crosstrack settings.
19	AC	2	103A	Incorrect overhead recovery pro.
19	CP	2	9	Failed to change radio frequency on lead's command.
			98B	2500' close on SKE descent.
19	AC	1/2	4	Did not refer to checklist for Pilot/Loadmaster briefing.
			7	Failed to direct and monitor the raising of flaps.
19	CP	1/2	7	Raised flaps without direction of pilot.

Checkride Discrepancies for Pilots
(Classes 81-011 thru 019, Airdrop Only)

TEST GROUP

Class No.	Crew Pos.	Qual Level	Form 4C Subarea	*Description*
14	AC	2	97B	Overcontrol during entire SKE mission.
			98B	Same
			103B	Same
			101C	Called for CDS flap setting at 110kts.
14	AC	2	101B	Closed to 2000' spacing during run-in.
			102	Held 2000' spacing during escape.
			103A	Rolled out on overhead final at 200 ft.
14	AC	2	103A	High airspeed on downwind recovery.
			103B	Too long on lead during SKE st-in.
14	CP	1/2	103B	Did not backup pilot on SKE st-in.

Checkride Discrepancies for Navigators
(Classes 81-11 Thru 18)

CONTROL GROUP

Class No.	Qual Level	Form 48 Sub-area	Description
11	2	42	Computer Operation
		48	SKE Knowledge and Use
		58	Drop Zone Alignment
13	1/2	6	Navigation Equipment Preflight
		43	Low Level Chart Preparation
15	1/2	10	Currency of Publications
	1/2	49	In-Flight Warnings
	3	46	Low Level Navigation
		52	Timing (Airdrop)
		53	Airdrop Accuracy
		60	Airborne Radar Approach
	3	48	SKE Knowledge and Use
		49	In-Flight Warnings
		60	Airborne Radar Approach

TEST GROUP

Class No.	Qual Level	Form 48 Sub-area	Description
14	2	46	Low Level Navigation
	3	52	Timing (Airdrop)
		53	Airdrop Accuracy
16	3	46	Low Level Navigation
		53	Airdrop Accuracy
		60	Airborne Radar Approach
18	3	46	Low Level Navigation
		49	In-Flight Warnings
		55	Navigation Planning and Briefing
		59	Time over Target

SUMMARY OF SUBAREAS GRADED LESS THAN Q-1 ON FLIGHT EVALUATIONS (PILOTS)[1]

TEST GROUP (30 STUDENTS)

Discrepancy[2]	No. of Times Noted
SKE recovery (103B)	3
Visual recovery (103A)	2
SKE departure (97B)	1
SKE enroute formation (98B)	1
Airdrop formation position/altitude/airspeed (101B)	1
Airdrop execution (101C)	1
Escape (102)	1

CONTROL GROUP (60 STUDENTS)

Discrepancy[2]	No. of Times Noted
SKE enroute formation (98B)	8
SKE recovery (103B)	6
Escape (102)	5
Crew Coordination (7)	5
Airdrop execution (101C)	4
SKE departure (97B)	3
Use of checklist (4)	3
Knowledge of airdrop procedures (94A)	2
Visual recovery (103A)	2
Communication procedures (9)	2
Life Support Systems (10)	1
ILS precision approach (36B)	1
Knowledge of formation procedures (94B)	1
Airdrop formation position/altitude/airspeed (101B)	1

[1]Information extracted from MAC Forms 4C

[2]Number in parenthesis refers to MAC Form 4C subarea

SUMMARY OF SUBAREAS GRADED LESS THAN Q-1 ON FLIGHT EVALUATIONS (NAVIGATORS)[1]

TEST GROUP (15 STUDENTS)

Discrepancy Area[2]	No. of Times Noted
Low Level Navigation (46)	3
Airdrop Accuracy (53)	2
In-Flight Warnings (49)	1
Navigation Planning and Briefing (55)	1
Timing (Enroute and Airdrop) (52)	1
Time over Target (59)	1
Airborne Radar Approach (60)	1

CONTROL GROUP (30 STUDENTS)

Discrepency Area[2]	No. of Times Noted
SKE Knowledge and Use (48)	2
Airborne Radar Approach (60)	2
In-Flight Warnings (49)	2
Navigation Equipment Preflight (6)	1
Currency of Publications (10)	1
Computer Operation (42)	1
Low Level Chart Preparation (43)	1
Low Level Navigation (46)	1
Timing (Enroute and Airdrop) (52)	1
Airdrop Accuracy (53)	1
Drop Zone Alignment (58)	1

[1]Information derived form MAC Forms 48

[2]Number in parenthesis refers to MAC Form 48 sub-area

Summary of Instructor Mission Reports
By Class
(Instructor Pilots and Navigators)

Mission Number	Hours Used 0[A]	0[B]	0[C]	1	2	3	4	Device Operation Poor	Good	Exc	Training Accomplished Poor	Good	Exc	Class
1	0	0	0	0	1	0	3	2	6	0	2	3	3	81-012
2	0	0	0	0	0	0	4	0	7	1	0	4	4	
3	0	0	0	0	0	0	4	0	1	4	0	1	3	
4	0	0	1	0	0	0	3	0	3	4	0	2	5	
1	1	0	0	0	0	0	3	2	4	0	1	3	2	81-014
2	0	2	0	0	0	1	1	3	4	3	2	5	3	
3	0	0	0	0	0	0	4	2	3	2	0	4	3	
4	1	0	0	0	1	0	2	1	5	0	0	4	2	
1	0	0	0	0	0	1	3	1	3	4	0	5	3	81-016
2	0	0	0	0	1	0	3	2	3	3	0	4	4	
3	1	0	0	0	0	0	3	2	6	1	1	5	3	
4	0	0	0	0	1	0	3	1	2	1	1	2	1	
1	0	0	0	0	0	0	3	0	4	2	0	3	3	81-018
2	1	0	0	0	2	1	0	8	0	0	4	3	1	
3	0	0	0	0	1	0	2	1	4	1	0	1	5	
4	0	0	0	0	0	0	3	0	3	1	0	2	2	
SUMMARY														
1	1	0	0	0	1	1	12	5	17	6	3	14	11	ALL CLASSES
2	1	2	0	0	3	1	8	13	14	7	6	16	12	
3	1	0	0	0	1	0	13	5	14	8	1	12	14	
4	1	0	1	0	2	0	11	2	13	6	1	10	10	

[A] Mission lost and not made up.

[B] Mission lost and made up.

[C] Crew not scheduled/proficiency advancement.

Instructor Comments

(Source: Simulator Mission Reports)

Class 81-012

Consider proficiency advancement after 3 missions. (2)
Report times provide excessive time prior to mission. (fixed)
Playback feature does not operate consistently. (mx)
Training Programs Branch should provide instructor guide updates. (fixed)
Demo feature does not operate consistently. (mx)
Errors in mission briefing. (3) (fixed)
Qualified maintenance personnel not available. (4) (mx)
More information required on Demo deletion. (fixed)
SKE inoperative. (2) (mx)
Simulator motion inoperative. (2) (mx)
FCI commands missing at Benit. (mx)
UHF-1 radio inoperative. (mx)
More information required on Playback and Scratchpad IC features. (fixed)
Demo's require revision. (2)
Need capability for 5 seconds and execute FCI's only.
Training Programs should provide headings on recovery routes. (7) (fixed)
Delete or shorten mission briefing. (2)
Revise instructor guide for Playback feature. (fixed)
Mission briefings are excellent. (2)
Good maintenance response. (3)
Request pre-computed TOLD. (fixed)
Request routes in lead position. (2) (fixed)
IFS climbs to 2500 ft MSL instead of 3000 ft MSL. (mx)
CRT display elongates. (2) (mx)
Remove extra instructor guide page. (fixed)
Incorporate airborne radar approaches in profiles. (3) (fixed)
Incorporate more instrument approaches in profiles.
Provide correct number of charts to navigators. (fixed)
0400 mission start excessively early. (2)
Include more SKE malfunctions in profiles. (fixed)
Schedule a flight engineer for each mission. (2)
Provide another briefing room. (fixed)
Suggest maintenance debrief crews after mission.
FCI commands remain illuminated as lead. (mx)
Request guidance on use of thermostat. (fixed)
Equipment load failed to exit IFS. (mx)
Integrate IFS and flight missions.
Computer disc error. (mx)
Only one keyboard operational at IOS for all but one mission. (mx)

Instructor Comments

(Source: Simulator Mission Reports)

Class 81-014

SKE inoperative. (2) (mx)
Demo feature does not operate consistently. (2) (mx)
Radar inoperative. (2) (mx)
CRT display enlogates. (6) (mx)
Student study guide in error. (fixed)
Error in MAC Form 512. (2) (fixed)
Weather information missing. (2) (fixed)
Mission information fails to specify single or double stick CDS. (fixed)
Correction copy of instructor guide missing. (fixed)
Instructor guide fails to specify descent from 3000 ft MSL to 2000 ft MSL for All-American DZ. (3) (fixed)
MAC Form 280 in error. (2) (fixed)
Fuel control panel inoperative. (mx)
UHF radios inoperative. (mx)
Interphone inoperative. (mx)
Power interrupted. (mx)
Blade de-ice timer inoperative. (mx)
Computer disc would not load. (2) (mx)
Hydraulic control loading inoperative. (2) (mx)
Revise instructor guide for lead position profile. (fixed)
Computer generated wingmen not in position. (3) (mx)
Copilot's instrument panel inoperative. (2) (mx)
Instructor guide has incorrect drift scripted. (fixed)
CPU failure. mx)
Omega navigaticn system inoperative. (mx)
Correction copy of instructor guide hard to read. (fixed)
FCI com ıds remain illuminated as lead. (mx)
Suggest maintenance debrief crews after mission.
CRT's inoperative. (2) (mx)
Simulator motion inoperative. (mx)

Instructor Comments

(Source: Simulator Mission Reports)

Class 81-016

Demo's require revision. (2)
Schedule a flight engineer for each mission. (4)
Error in mission briefing. (fixed)
Error in student study guide. (fixed)
Request more detail in MAC Form 280. (fixed)
Track-while-scan instruments inoperative. (2) (mx)
Request more detail in student study guide. (fixed)
Instructor guide fails to specify descent from 3000 ft MSL to 2000 ft MSL for All-American DZ. (fixed, again)
MAC Form 280 in error. (2) (fixed)
Computer card failure. (mx)
Scripted weather unrealistic. (fixed)
MAC Form 348 missing. (fixed)
Low service voltage. (mx)
FCI commands remain illuminated as lead. (mx)
Request non-AWADs flight plans for routes in lead position. (fixed)
Instructor guide has incorrect drift scripted. (fixed)
IFS motion platform jerks. (2) (mx)
Request more thorough preflight checks by maintenance. (mx)
Computer dumped mission. (mx)
CRT's frozen. (mx)

Class 81-018

CRT's inoperative. (mx)
No PPI display during demo. (2) (mx)
Computer generated lead's FCI commands did not match performance. (mx)
PPI inoperative. (mx)
IFS went inverted and crashed. (5) (mx)
Reduce number of IFS missions for navigators to 2.
IFS motion platform jerks. (7) (mx)
High terrain on recovery route provides good training. (2)
SKE lead training beneficial. (2)
Instructor guide is scripted with different wind values for CCT and lead. (fixed)
CG shift not evident as load exited. (mx)

Reported Maintenance Problems By Class

(Source: Simulator Mission Reports)

<u>81-012</u>

Playback feature does not operate consistently.
Demo Feature does not operate consistently.
Qualified maintenance personnel not available. (4)
SKE inoperative. (2)
Simulator motion inoperative. (2)
FCI commands missing at Benit.
UHF-1 radio inoperative.
IFS climbs to 2500 ft MSL instead of 3000 ft MSL.
CRT display elongates. (2)
FCI commands remain illuminated as lead.
Equipment load failed to exit IFS.
Only one keyboard operational at IOS for all but one mission.
Computer disc error. (1/2 mission lost)

<u>81-014</u>

SKE inoperative. (2)
Demo feature does not operate consistently. (2) (1/2 mission lost)
Radar inoperative. (2)
CRT display elongates. (6)
Fuel control panel inoperative.
UHF radios inoperative.
Interphone inoperative.
Power interrupted.
Blade de-ice timer inoperative.
Computer disc would not load. (2)
Hydraulic control loading inoperative. (2) (3 missions lost)
Computer generated wingmen not in position. (3)
Copilot's instrument panel inoperative. (2)
CPU failure (1/2 mission lost)
Omega navigation system inoperative.
FCI commands remain illuminated as lead.
CRT's inoperative. (2)
Simulator motion inoperative. (1 mission lost)

<u>81-016</u>

Track-while-scan instruments inoperative. (2)
Computer card failure. (1/2 mission lost)
Low service voltage.
FCI commands remain illuminated as lead.
IFS motion platform jerks. (2) (1/2 mission lost)
Computer dumped mission.
CRT's frozen. (1 mission lost)

<u>81-018</u>

CRT's inoperative.
No PPI display during demo. (2)
Computer generated lead FCI commands did not match performance.
PPI inoperative.
IFS went inverted and crashed. (5) (2 1/2 missions lost)
IFS motion platform jerks. (7)
CG shift not evident as load exited.

A total of 10 missions lost out of 60 scheduled missions for a 17% ineffective rate.
NOTE: Numbers in parenthesis indicate number of occurrences.

Unresolved Comment Summary

Instructors

Schedule a flight engineer for each mission. (6)
IFS maintenance detracted from training. (5)
Demo's require revision. (4)
Good maintenance response. (3)
Delete or shorten mission briefings. (2)
Consider proficiency advancement after 3 missions. (2)
Mission briefings are excellent. (2)
0400 mission start excessively early. (2)
Suggest maintenance debrief crews after mission. (2)
Auto message function unrealistic. (2)
Incorporate more instrument approaches in profiles.
Integrate IFS and flight missions.
Need capability for 5 second and execute FCI's only.
Flight plan and plot recovery route.
Request more thorough preflight checks by maintenance.
Revise computer missions so they need not be manually inputted.
Reduce number of IFS missions for navigators to 2.
High terrain on recovery route provides good training.
Integrate ground training periods between IFS missions.
SKE lead training beneficial.
Reduce number of IFS missions for navigators to 3.
Variety of formation positions beneficial to training.
Students should prepare mission briefing.

Memo for Record 4 Nov 81

Subject: Simulator Instructor Meeting, 30 Oct 81

1. A meeting of simulator instructors was held at the 62 TAS Briefing Room 30 Oct 81. The purpose was to provide additional feedback on selected topics concerned with the IFS SKE Test Program. Discussion topics were chosen by Captains Kotora and Siebert based on identified problem areas or points of instructor disagreement. All available simulator instructors attended:

INSTRUCTOR PILOTS	INSTRUCTOR NAVIGATORS
Maj M. Riley	Capt H. LeBeouf
Capt R. Griffiths	Capt J. DeAngelo
Capt C. Clark	Capt R. McCarty
Capt J. Kotora	Capt W. Siebert

2. The attendees were briefed on the purpose of the meeting and all the discussion topics were introduced. Each topic was then individually brought before the attendees for open discussion.

a. Topic: What is the training impact of loss of simulator motion (maintenance failure)?

Discussion: Consensus that training lost was significant. Estimates of the range of training lost varied widely from 25% to 75%. Consensus reached that training lost will vary inversely with student experience.

b. Topic: Would a simulator progress check be useful?

Discussion: No - not as long as the flight evaluation must be completed in the aircraft.

c. Topic: What is the best mission briefing format?

Discussion: A full tactical briefing prior to each mission is not necessary. After the first mission, briefings should only cover the high points.

d. Topic: What do you think of the mission profiles? Do the pilots need a proficiency mission (no route training)?

Discussion: Mission profiles are good. A proficiency mission for pilots is not needed. The navigators felt the third and fourth missions should use only AA 29 routes. Support was expressed for the terrain avoidance exercise on mission number two.

e. Topic: What is the value and best format to use Auto Message?

Discussion: Auto Message usefulness is less than desired. Use should be at the instructor's option.

f. Topic: What is the value and best format to use sound level?

Discussion: Sound significantly increases realism. Specific level and use should be at instructor's option.

g. Topic: Is crew show time prior to mission start time correct?

Discussion: Yes.

h. Topic: Is it necessary that the flight engineer position be filled?

Discussion: No consensus.

i. Topic: Should malfunctions be scripted into the missions?

Discussion: Use of malfunctions should be at instructor's option. A handout listing possible manfunctions would be useful.

j. Topic: Direction from maintenance has been to document equipment failures in the AFTO Form 781. Should maintenance also sign off an exceptional release?

Discussion: Yes, AFTO Form 781 procedures in the IFS should be the same as those for the aircraft.

k. Topic: Should simulator time be blocked together or integrated with flying missions?

Discussion: Simulator missions should be interspersed among flying missions.

l. Topic: What is the optimum mix of simulator/flying missions?

Discussion: 4 simulator missions.
6 or 7 flight missions.
1 flight evaluation.

m. Topic: Are there any suggestions for improvement to the simulator instructor checkout program?

Discussion: Reduce the lengths of the academic phase. Increase hands on training. Include training missions with students.

WILLIAM F. SIEBERT, Captain, USAF
Navigator Phase II Course Manager

AREA / SUB-AREAS	1	2	3	REMARKS
VIII. TACTICAL AIRLAND				
89. ASSAULT PROCEDURES				
90. ASSAULT TAKEOFF *(Except CP)*				
91. ASSAULT LANDING *(Except CP)*				
92. TALAR				
93. COMBAT OFFLOAD				
IX. TACTICAL AIRDROP				
94. KNOWLEDGE OF				
A. AIRDROP PROCEDURES *(Normal/Emergency)*				
B. FORMATION PROCEDURES *(Normal/Emergency)*				
C. WEATHER LIMITATIONS				
95. FORMATION TAXI				
96. FORMATION TAKEOFF				
97. DEPARTURE/ASSEMBLY				
A. VISUAL				
B. SKE/AWADS				
98. ENROUTE FORMATION				
A. VISUAL				
B. SKE/AWADS				
99. LOW/MID-LEVEL NAVIGATION				
100. SLOWDOWN				
101. AIRDROP				
A. DZ ACQUISITION/TRACK				
B. FORMATION POSITION/ALTITUDE/AIRSPEED				
C. EXECUTION				
102. ESCAPE				
103. RECOVERY				
A. VISUAL				
B. SKE/AWADS				
104. FORMATION LANDING				
105.				
106.				
X. SPECIAL MISSION/QUALIFICATION				
110. LEAD QUALIFICATION				
A. LEADERSHIP/PLANNING				
B. FLIGHT COMMANDS				
111. LAPES				
A. KNOWLEDGE				
B. PERFORMANCE				
112. BERLIN CORRIDOR				
A. KNOWLEDGE				
B. PERFORMANCE				

C-130 PILOT FLIGHT EVALUATION

NAME *(Last, First, M.I.)*	GRADE	SSN
ORGANIZATION / LOCATION	AIRCRAFT/CREW POSITION	ELIGIBILITY PERIOD

GROUND PHASE	FLIGHT PHASE
EXAMINATION - DATE - GRADE	TYPE EVALUATION - DATE

QUALIFICATION LEVEL	RESTRICTIONS	ADDITIONAL TRAINING DUE DATE
EXPIRATION DATE OF QUALIFICATION	DATE COMPLETED	
EXAMINER	REVIEWING OFFICER	APPROVING OFFICER

COMMENTS

TYPE EVALUATION/MINIMUM REQUIREMENTS

QUALIFICATION	INSTRUMENT *(Including a landing)*	INITIAL QUAL/REQUAL	TACTICAL AIRLAND
I, II	I, III	I, II, III	I, VIII
TACTICAL AIRDROP	NUCLEAR	INSTR/EXAMR *(Init instr include all landings)*	SPECIAL MSN QUAL
I, IX	I, VI	I, VII	I, X

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AREA / SUB-AREAS	1	2	3	REMARKS
I. GENERAL				
1. KNOWLEDGE OF DIRECTIVES				
2. MISSION PREPARATION/PLANNING				
3. PREFLIGHT/VISUAL INSPECTION				
4. USE OF CHECKLIST				
5. SAFETY CONSCIOUSNESS				
6. JUDGMENT				
7. CREW COORDINATION				
8. BRIEFING(S)				
9. COMMUNICATION PROCEDURES				
10. LIFE SUPPORT SYSTEMS				
11. KNOWLEDGE/COMPLETION OF FORMS				
12. CURRENCY OF PUBLICATIONS				
13.				
14.				
15.				
II. QUALIFICATION				
16. ENGINE START				
17. TAXI/ENGINE RUNUP				
18. TAKEOFF				
19. VFR PATTERN/APPROACH				
20. LANDINGS				
A. FULL FLAP				
B. PARTIAL FLAP				
C. NO FLAP *(AC, IAC, FEAC)*				
D. RIGHT SEAT *(AC, IAC, FEAC)*				
E. ENGINE OUT				
F. TOUCH AND GO *(IAC/FEAC)*				
J. THRESHOLD ALTITUDE/AIRSPEED				
K. ALIGNMENT WITH RUNWAY				
L. FLARE AND TOUCHDOWN				
M. LANDING ROLL				
21. ENGINE OUT GO-AROUND				
22. AFTER LANDING/ENGINE SHUTDOWN				
23. REVERSE TAXI *(AC, IAC, FEAC)*				
25. BOLDFACE EMERGENCY PROCEDURES				
26. OTHER EMERGENCY PROCEDURES				
27. SYSTEMS OPS/KNOWLEDGE/LIMITATIONS				
A. BLEED AIR				
B. FUEL/OIL				
C. ELECTRICAL				
D. ENGINES				
E. AVIONICS				

AREA / SUB-AREAS	1	2	3	REMARKS
II. *(Continued)*				
F. HYDRAULIC				
G. PROPELLERS				
28.				
29.				
30.				
III. INSTRUMENT				
31. INSTRUMENT DEPARTURE/SID				
32. ENROUTE NAVIGATION				
33. HOLDING				
34. USE OF NAVAIDS				
35. DESCENT/ARRIVAL				
36. PRECISION APPROACHES				
A. PAR				
B. ILS				
37. NONPRECISION APPROACHES *(Any two)*				
A. NDB				
B. ASR/ARA				
C. VOR				
D. TACAN				
E. LOCALIZER				
38. CIRCLING APPROACH				
39. MISSED APPROACH				
40. ENGINE OUT APPROACH *(AC, IAC, FEAC)*				
41. WEATHER AVOIDANCE PROCEDURES				
42.				
45. FLIGHT PROGRESS/RANGE CONTROL				
49. AUTHENTICATION				
VI. NUCLEAR AIRLIFT				
75. SECURITY				
76. NO-LONE ZONE/TWO-MAN CONCEPT				
77. ONLOAD/OFFLOAD PROCEDURES				
78. COMMUNICATIONS/NOTIFICATION PROCEDURES				
79. ACCEPTANCE/TRANSFER OF CUSTODY				
80. EMERGENCY ACTIONS				
81.				
VII. INSTRUCTOR/FLIGHT EXAMINER				
83. INSTRUCTIONAL/EVALUATION ABILITY				
84. DEMONSTRATION OF MANEUVERS *(IAC)*				
85. CRITIQUE				
86.				

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NAVIGATOR FLIGHT EVALUATION

NAME (Last, First, M.I.)	GRADE	SSN
ORGANIZATION / LOCATION	AIRCRAFT/CREW POSITION	ELIGIBILITY PERIOD

GROUND PHASE	FLIGHT PHASE
EXAMINATION - DATE - GRADE	TYPE EVALUATION - DATE

QUALIFICATION LEVEL	RESTRICTIONS	ADDITIONAL TRAINING DUE DATE
EXPIRATION DATE OF QUALIFICATION		DATE COMPLETED
EXAMINER	REVIEWING OFFICER	APPROVING OFFICER

COMMENTS

TYPE EVALUATION/MINIMUM REQUIREMENTS

QUALIFICATION	TACTICAL/AIRDROP			ARRS OPL/CMBT MISSION
	WING	LEAD	AWADS	
I thru X	XIA, B	XIA, B, C	XIA, B, C, D	XII
AIR REFUELING		INSTRUCTOR/EXAMINER		
XIII		XIV		

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AREA / SUB-AREAS	1	2	3	REMARKS
XII. ARRS OPERATIONAL/COMBAT MISSION				
A. OPERATIONAL				
68. NONCOMBAT SEARCH PATTERN				
69. ORBIT PROCEDURES				
70. TRANSITION TO SEARCH				
71. WIND FROM SURFACE				
72. COMPUTATION OF MISSION DATA				
73. USE OF EQUIPMENT				
B. COMBAT				
74. KNOWLEDGE				
75. APPLICATION				
76.				
77.				
XIII. AIR REFUELING				
78. RENDEZVOUS PROCEDURES/EQUIPMENT				
79.				
XIV. INSTRUCTOR/FLIGHT EXAMINER				
80. MISSION PREPARATION/BRIEFING				
81. INSTRUCTIONAL/EVALUATION ABILITY				
82. KNOWLEDGE OF PUBLICATIONS & PROCEDURES				
83. TECHNICAL KNOWLEDGE				
84. CRITIQUE				
85. FORMS COMPLETION				

AREA / SUB-AREAS	1	2	3	REMARKS
I. **GENERAL**				
1. KNOWLEDGE OF DIRECTIVES				
2. CREW COORDINATION				
3. USE OF CHECKLIST				
4. PROFESSIONAL EQUIPMENT				
5. MISSION PREPARATION FLIGHT PLANNING				
6. NAVIGATION EQUIPMENT PREFLIGHT				
7. KNOWLEDGE AND USE OF FLIPS				
8. DEPARTURE MONITORING				
9. LIFE SUPPORT EQUIPMENT				
10. CURRENCY OF PUBLICATIONS				
11. APPROACH MONITORING				
12. KNOWLEDGE OF EMERGENCY PROCEDURES				
13. POST-FLIGHT				
14.				
15.				
16.				
17.				
18.				
II. **BASIC NAVIGATION PROCEDURES**				
19. DEAD RECKONING TECHNIQUES				
20. USE OF FLIGHT INSTRUMENTS				
21. FLIGHT RECORDS AND CHARTS				
22. ETA AND COURSE TOLERANCES				
23. FUEL MANAGEMENT				
24. DEVIATION CHECK				
25. PACING				
26.				
27.				
III. **PRESSURE PATTERN** *(Applicable Acft)*				
28. KNOWLEDGE AND USE				
29. PLOTTING				
IV. **CELESTIAL**				
30. KNOWLEDGE AND USE				
31. PLOTTING				
V. **RADIO**				
32. KNOWLEDGE AND USE				
33. PLOTTING				
VI. **RADAR**				
34. KNOWLEDGE AND USE				
35. PLOTTING				

AREA / SUB-AREAS	1	2	3	REMARKS
VII. **LORAN** *(Applicable Acft)*				
36. KNOWLEDGE AND USE				
37. PLOTTING				
VIII. **DOPPLER RADAR** *(Applicable Acft)*				
38. KNOWLEDGE AND USE				
IX. **GRID**				
39. KNOWLEDGE/APPLICATION OF PROCEDURES				
40. DEGRADED SYSTEMS *(C-5)*				
X. **NAVIGATION COMPUTERS**				
41. KNOWLEDGE AND USE				
42. COMPUTER OPERATION				
XI. **TACTICAL/AIRDROP EVALUATION**				
A. MISSION PLANNING				
43. LOW LEVEL CHART PREPARATION				
44. PREFLIGHT AIRDROP COMPUTATIONS				
B. MISSION EMPLOYMENT				
45. DEPARTURE TIMING				
46. LOW LEVEL NAVIGATION				
47. STATION KEEPING PROCEDURES				
48. SKE KNOWLEDGE AND USE				
49. IN-FLIGHT WARNINGS				
50. IN-FLIGHT AIRDROP COMPUTATIONS				
51. DROP ZONE IDENTIFICATION				
52. TIMING *(Enroute and Airdrop)*				
53. AIRDROP ACCURACY				
54. POST-DROP PROCEDURES				
C. FORMATION LEAD PROCEDURES				
55. NAVIGATION PLANNING AND BRIEFING				
56. ENROUTE PROCEDURES *(High/Low)*				
57. SLOWDOWN				
58. DROP ZONE ALIGNMENT				
59. TIME OVER TARGET				
60. AIRBORNE RADAR APPROACH *(C-130)*				
D. AWADS				
61. RADAR OPERATION				
62. COMPUTER OPERATION				
63. CAP ACQUISITION AND DZ TRACKING				
64.				
65.				
66.				
67.				

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